





U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, *Secretary*

CHILDREN'S BUREAU

GRACE ABBOTT, *Chief*

# MATERNITY AND INFANT CARE

## IN A MOUNTAIN COUNTY IN GEORGIA

BY

GLENN STEELE



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# CONTENTS.

	Page.
Letter of transmittal.....	v
Introduction.....	1-3
Scope of the Georgia survey.....	2
The mountain county.....	5-10
Part of area within national forest.....	5
Copious water supply.....	5
Roads.....	6
Isolated homes.....	6
Railroad, post, and telephone service.....	7
Agricultural development.....	7
Principal products.....	8
Mining a secondary industry.....	9
County health service.....	9
Inaccessibility of medical care.....	10
Maternity care.....	11-22
Large families.....	11
Prenatal care.....	11
Attendant at birth.....	14
Postnatal care by physicians.....	15
Physicians' fees.....	16
Midwives.....	16
Complications.....	18
Mothers' work.....	19-21
Field work.....	20
Work in relation to childbearing.....	21
Care and rest following childbirth.....	21
Child care and infant mortality.....	23-33
Illiteracy.....	23
Instruction in infant care.....	24
Infant feeding.....	25
General health.....	27
The snuff habit.....	29
Illnesses of children.....	29
Maternal histories.....	30
Infant mortality.....	31
Losses in early infancy.....	31
Causes of death.....	33
Use of patent medicines and home remedies.....	35-40
Federal food and drugs act.....	35
Patent medicines given babies.....	36
Patent medicines used by pregnant women.....	37
Teas used for medicinal purposes.....	39
Other home treatment for babies.....	40

	Page.
Housing and sanitation.....	41-46
Congestion .....	41
Crowded sleeping quarters.....	42
Houses without windows.....	43
Attractive features of mountain homes.....	43
Household equipment .....	44
Lack of toilets.....	45
Water supply.....	45
Typhoid fever .....	46
State health activities relating to maternity and infancy.....	47-51
Birth and death registration.....	47
Mortality statistics.....	48
Division of child hygiene.....	49
County health organization.....	50
Public-health nursing.....	50
Summary.....	53
Conclusions.....	57

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## ILLUSTRATIONS.

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	Face page.
Plate I. Typical roads .....	6
II. Primitive methods of farming.....	8
III. Mountain mothers and their babies.....	18
IV. Mountain children.....	28
V. Types of mountain houses.....	42

## LETTER OF TRANSMITTAL.

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U. S. DEPARTMENT OF LABOR,  
CHILDREN'S BUREAU,  
*Washington, December 13, 1922.*

SIR: There is transmitted herewith a report entitled "Maternity and Infant Care in a Mountain County in Georgia," one of a series of bureau studies of child welfare in rural areas. The field work was done under the direction of Miss Margaretta A. Williamson and the report was written by Miss Glenn Steele. Dr. Frances Sage Bradley was in charge of the children's health conferences held in the course of the investigation.

The Children's Bureau is indebted to State and local health officials and to physicians and school officials of Georgia for much helpful cooperation.

It is a pleasure to report that since this survey was undertaken there has been a great expansion of public-health activities in Georgia. The bureau of vital statistics was organized in the State board of health in January, 1919. Since that date the State has been admitted to the United States death-registration area and has instituted a campaign for complete birth registration which it is hoped will result in its inclusion in the United States birth-registration area. A division of child hygiene has been created, and the work of the State department of health has been expanded in other directions. The Federal Maternity and Infancy Act has been accepted by the legislature, and a State program for the reduction of maternal and infant mortality is now under way.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

HON. JAMES J. DAVIS,  
*Secretary of Labor.*





# MATERNITY AND INFANT CARE IN A MOUNTAIN COUNTY IN GEORGIA.

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## INTRODUCTION.

Public protection of maternity and infancy was accepted as a governmental policy when the law for the promotion of the welfare and hygiene of maternity and infancy was enacted in November, 1921. The act provides for the cooperation of State and Nation in an effort to safeguard the life and vigor of mother and child. Recognition of the need for constructive public action in their behalf followed nearly a decade of study of child welfare in the United States by the Children's Bureau.

Infant mortality was the first subject chosen for field investigation after the bureau's establishment in 1912. Little information touching the problem was available at the time, although an appalling annual loss of young life was indicated by estimates for the Nation, based upon meager data. To ascertain the facts, studies were commenced and have since been carried forward in American cities of diverse characteristics, and in 1916 a series of surveys of maternity care and child welfare in rural regions typical of various sections of the United States was begun.

The approach to the problem was necessarily somewhat different in town and country. In the cities fairly complete records of births and deaths permitted a measurement by infant mortality rates of the effect of various conditions upon the mortality under 1 year of age. The relation between existing conditions and infant mortality could not be shown with such precision for the rural areas owing to the careless accountancy of births and infant losses. The rural studies, therefore, have been developed with a view to showing the environment, opportunities, and needs of the country mother and child, rather than to connect various factors with the infant mortality rate.

The subject of maternity care has been especially emphasized in the rural studies, because of its important bearing upon child conservation. The high mortality in the first few weeks of life and the losses from stillbirths and miscarriages have demonstrated clearly that the safeguarding of the infant must begin with the protection

of the mother before and at the birth of her baby. In this respect the needs of the city and the country mother do not differ, but the problem of providing proper care for childbearing women is the more acute in rural districts because of isolation, lack of sufficient medical and nursing service, and limited opportunities for education in the hygiene of maternity. Therefore the problems confronting mothers in childbirth and in the care of their children have been coordinated in the rural studies.

The survey in Georgia is the eighth in the rural series, previous reports having been issued on studies made in seven country districts, representing five States—Kansas, Wisconsin, North Carolina, Mississippi, and Montana.

### **Scope of the Georgia survey.**

The Georgia county surveyed covers about 400 square miles in the southernmost extension of the Blue Ridge Mountain belt and is bordered by the bold escarpment of that range which forms the southeastern terminus of the great mountain system.

In topographical, social, and economic aspects, and in the customs and characteristics of its people, the county was considered representative of rural conditions in the mountain counties of Georgia as well as in the entire upland region of southern Appalachia. In addition, it afforded an opportunity for the study of child welfare among a people American by birth and descent, sprung from the sturdiest stocks—chiefly English, Irish, and Scotch. No other section of the country contains so large a percentage of native white persons of native parentage as does the southern Appalachian Mountain region, and in the county selected for study but 10 residents of foreign birth were enumerated in the Federal Census of 1920.

The county had approximately 2,400 families and 12,000 inhabitants at the time of the survey. Of the total population, about 4,000 were dwelling in six incorporated towns excluded from the study because they were not typical of farm conditions. This left about 1,600 families, including 8,000 persons, living in the open country.

In general, it was the purpose to limit the study to such of these rural families as were rearing infants at the time of the survey, in order that information could be secured concerning current conditions affecting maternal and infant welfare. An interview was sought from the mother of each baby born within two years preceding March 1, 1918, who resided in the area at the time of the baby's birth.

In the Georgia county, the problem of locating families in which births had occurred presented difficulties not encountered in rural surveys made in other parts of the United States. Although the

other rural surveys were conducted in States lacking complete birth registration and therefore not in the United States birth-registration area, yet each section studied had some system of recording births and infant deaths. The names and addresses of the parents to whom babies had been born could be secured from these records and were utilized as a point of departure in finding the families. The total lack of such public records in the Georgia county necessitated a canvass of every rural home to locate the babies coming within the scope of the study. In this way interviews were secured concerning 509 babies, including four sets of twins, born during the selected two-year period. Schedules were taken for infants who had died or were stillborn, as well as for the living. No colored infants or white infants of foreign-born parentage were discovered in the entire canvass.

In general, the topics of inquiry concerned the family history in relation to the well-being of the child; the health and care of the baby; the mother's prenatal, confinement, and nursing care during her last pregnancy and confinement; the size of the family and the losses sustained from stillbirths, miscarriages, and deaths; the mother's household and farm duties; the father's occupation; nativity and literacy of both parents; and the housing, sanitation, and general living conditions of the family.

In the main, the report is based upon information secured from the mothers, but this was supplemented by a study of all pertinent data available concerning the county, by consultations with State and county officials, and by interviews with physicians and midwives of the county. In addition, the work included a series of children's health conferences in various county centers, conducted at the close of the survey. A child-welfare exhibit was displayed, and parents were invited to bring children to the conferences for a physical examination by a Government physician who advised about their care, feeding, and general physical development.



## THE MOUNTAIN COUNTY.

Probably nowhere in the United States is maternal and infant welfare more conditioned by natural surroundings than in the Southern highlands; and a foreword on the physical characteristics of the county studied is essential to the understanding of its family life.

Although less rugged and remote than many of the upland regions of North Carolina and Tennessee, the entire county is a network of mountain spurs from the main Blue Ridge divide, with summits reaching altitudes of from 2,500 to more than 4,000 feet above sea level. These deploy in every direction, skirted and cut up by countless valleys, ravines, and gaps which form a labyrinth of intricate passageways.

Much of the county is under heavy forest cover. The timber includes a variety of hardwood species typical of southern Appalachia—oak, chestnut, poplar, bass, ash, hickory, and cherry. Pine is sometimes found with the mountain hardwoods, and in the more open country and along the larger streams elms, birches, and gums are abundant.

### Part of area within national forest.

To protect the headwaters of navigable streams, about 54 square miles of the forested section of the county—more than one-eighth of its area—has been purchased by the United States for inclusion in the Cherokee National Forest, and further purchases were pending at the time of the survey. This was virgin forest, except as it had been culled by the settler for home construction and farm purposes.

Deserted cabins on lands already acquired by the Government gave evidence of rapid depopulation; yet the entire section covered by the Government project could not be excluded from the county survey, for here and there within it families with little children were living on tracts not yet relinquished. In spite of increased isolation as their neighbors moved away, some owners were reluctant to part with their mountain home sites.

"I grew up here and know every curve of the hills," said the father of one family, "and I'd hate to sell this patch of ground."

### Copious water supply.

With heavy rainfall and the protection of forest cover, a copious water supply for the region is insured the year around. Only two

of the county's swift streams attain river size, but feeding these, countless creeks sweep down the steep mountain slopes and debouch by meandering courses into the main channels.

Illustrative of the turbulent character of these streams and of their coiling rock-cut courses is a description by the United States Geological Survey of the county's principal river:

Numerous small cascades and steep rapids alternate with quieter stretches. There are two cascades about 100 feet high.

[At one place] the river enters a tortuous mountain gorge, through which it flows 9 miles to gain 2 miles of actual distance, with a grade approximating 20 feet to the mile. This part of the river is full of rapids and is bordered by steep slopes and many cliffs. After emerging from the gorge, the river flows across a plateau in a valley 200 to 300 feet deep.

### **Roads.**

The effect of so rugged a topography on routes of travel was manifest, for the natural barricades of mountain, forest, and stream had seriously impeded the progress of road building. Although it was estimated that the county had about 400 miles of public roads, there were no improved highways. The roads were of dirt only; and owing to the character of the soil, the amount of rock, the steep grades, and the heavy rainfall, most of them were in poor condition.

Prior to 1917 little progress had been made in road building, owing to the operation of what was known as the "pick and shovel" law. Under that law each man "worked out" his road tax in his own vicinity, using his own tools. The county had no equipment. Little beyond the most needed repair work was accomplished in that way. This law was superseded in 1917 by a measure which demands either 10 days' work or a commutation tax of \$5 from citizens subject to road tax. As a result, cash payments were usually made and practically no one "worked" the roads.

In the year prior to this survey only about \$13,000 was available for road expenditures in the county. This sum included \$5,000 received from commutation taxes, which it was necessary to expend upon repair work in the districts where it was raised; so that not more than \$8,000 was available for road building. An estimate made by the State highway engineer for building earth roads in the most accessible part of the county placed the cost at \$2,000 per mile.

With the money available for one year, the county could have improved but 4 of its 400 miles of public highways. No attempt had been made to issue bonds to furnish funds for good roads, because it was not believed that the voters would favor the project, nor had State or Federal aid been secured.

### **Isolated homes.**

In the more inaccessible parts of the county homes were visited that could not be reached by wagon, access being by trail. Bridges

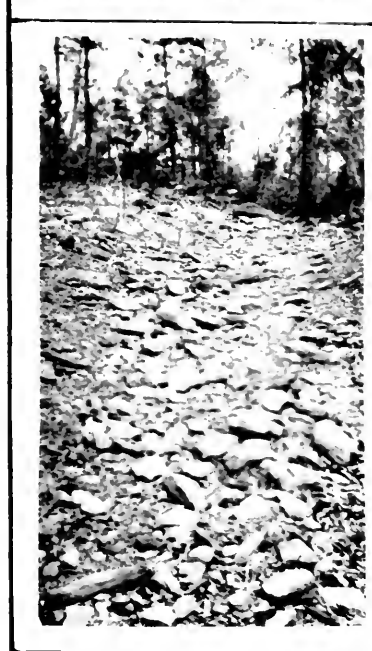


PLATE I.—TYPICAL ROADS.





were few, and it was often necessary to ford many times in a mile. The road leading to one home on the mountain side was crossed by a creek five times between the foot of the mountain and the cabin.

In one family, separated by a mountain range from the nearest store and post office, the father had not called for his mail in 12 months, the mother had not been to the settlement in 7 years, and the father's mother had lived 60 years before she saw a train.

Another woman living across the same range had never traveled beyond the nearest village, and had not gone there during the 9 years of her married life. A third instance was that of a mother who had not been to the nearest settlement, 6 miles away, in 20 years.

Ten miles to the nearest store or 15 miles to the nearest physician, "as the crow flies," were distances better measured by hazards than by miles, and the mountain family was isolated by poor roads rather than by distances. A mother who resided only 3 miles from town, one-third of the distance rugged trail, stated she had lived there a year before she saw another woman. At one home the father gave most of the requested information, and explaining his wife's shyness said: "She has seen mighty nigh no strangers and never seen a train."

Not many farm families owned vehicles suitable for transportation. Automobiles were owned by townsmen and a few farmers, but could be driven only over main-traveled roads. Carriages and buggies were not common, and horse and wagon or ox and cart were the usual means of family travel. Moreover many families were without these.

### **Railroad, post, and telephone service.**

The county was not, like some of its neighbors, wholly without railroad service, its two most accessible valleys being tapped by branch roads. It had a larger number of post offices than any other county of Georgia, owing to the lack of rural delivery service. Two Star routes carried mails from town to town, but delivery service to rural homes was furnished only over one short route. The rural resident was obliged to travel to the nearest post office for his mail—sometimes a day's journey.

The telephone had not come into common use, and house phones were found installed in only 3 per cent of the homes visited. Connections between towns had been established but in most cases the town telephone was too far away to be of immediate assistance in time of need.

### **Agricultural development.**

Agriculture is the chief industry of the county, although only 57 per cent of its land area is in farms, and of the so-called farm land

about three-fourths is woodland and but one-fourth under cultivation.<sup>1</sup> In the plateaus and valleys well-cultivated and productive farms are found; but many farm sites are on the mountain slopes, where clearing and tillage are so difficult that cultivation is confined to a small fraction of each holding and the crop usually limited to what can be cultivated by hoe and harvested by hand.

Poor roads and inaccessible markets play a large part in the retardation of farming. Without the prospect of profitable marketing there is little incentive to increase crops by tillage on a larger scale and the introduction of modern machinery; consequently the mountain farmer often raises only sufficient foodstuffs for his own family.

The agricultural data collected in the Federal Census of 1920 furnish the following facts concerning the mountain county:

The average farm acreage was 106, with but one-fourth under improvement. The value of the average farm was placed at \$1,708 and the value per acre was given as \$9.27.

Of the 1,387 farmers but 5 were colored and 1 of foreign birth.

More than 70 per cent of all farms were worked by owners and but 29 per cent by tenants, of whom the majority were share-tenants or croppers. Only 6 per cent of the farms cultivated by owners were mortgaged.

Although farming by tenancy has increased noticeably in Georgia—two-thirds of its farms are cultivated by tenants<sup>2</sup>—the tendency of the mountain farmer is to own his own land and to hold it free from debt. The effect of land ownership by the farmer was seen in the stability of the county's population. The majority of the families coming within the scope of the survey were permanent residents, and there was little evidence of the migration associated with the landless farmer.

### Principal products.

The corn crop is the mainstay of the county, with rye, wheat, potatoes, beans, peas, sorghum, apples, and live stock as other principal products. Often corn, potatoes, poultry, pigs, and the summer garden products were the sum total of supplies raised for family maintenance. In other cases more diversified crops pointed to interesting possibilities for agricultural development.

At one hilltop farm reached by a rough and seldom-traveled trail the home of a family of seven, including a baby of 5 months, was visited. This farm had a good orchard with a variety of fruit trees, including apple, peach, cherry, and apricot. An interesting addition to the staple crops was a large ginseng bed under a covering of pine boughs. The roots of this medicinal herb are exported to China,

<sup>1</sup> Fourteenth Census of the United States, 1920. Bulletin, Agriculture: Georgia, p. 17.

<sup>2</sup> Fourteenth Census of the United States, 1920. Bulletin, Agriculture: Georgia, pp. 16, 56.



PLATE II.—PRIMITIVE METHODS OF FARMING.



and the farmer stated he received \$1 a pound for his yield. Although the roots take seven or eight years to mature, ginseng growing is profitable.

Sheep and cattle were scarcer than would be expected in a region adapted to grazing, but usually hogs were kept, pork products and corn being the chief articles of family diet. Fortunately, milk was frequently a most valuable addition to this limited fare, for about 90 per cent of the families visited owned milch cows.

### **Mining a secondary industry.**

Mining was the industry second in importance in the county, copper being the chief of a considerable variety of mineral deposits. Copper prospects in one corner of the county had been operated sporadically for half a century and one mine had been extensively developed. The ore was shipped to a smelting center across the county border for treatment. The influence of this adjacent mining town was felt in the rural part of the county near by, both because vegetation had been injured by sulphur fumes from the roasting and smelting processes and because employment in mine and smelter was open to the farmer.

### **County health service.**

The county had not adopted important measures to safeguard the general health of its citizens which were authorized by State legislation. The Ellis health law, an act providing for organized county boards of health and for full-time health commissioners, had not been accepted by the county and it was without a full-time health officer. The county physician had a few routine duties to perform such as caring for the health of prisoners, but he was a practicing physician who was not expected or paid to devote his entire time to county health work.

The State law providing for the registration of vital statistics was another measure not enforced in the county at the time of the survey. Public records of births and of deaths were thus nonexistent, and figures were lacking whereby the county could take stock of the well-being of its people by the index of infant, maternal, or general mortality.

The State of Georgia had no law regulating the practice of midwifery, and at the time of the survey had none requiring the use of prophylactics for the prevention of blindness in the newborn.

Facilities for medical care of the mountain mother and child were meager, the lack of hospital service being most conspicuous. Although some 400 square miles in area, the county had no hospital; and none was located in any of the adjacent counties of Georgia. Of the 505 mothers included in the study but one had been confined

in a hospital. She had traveled 142 miles to the metropolis of another State to secure hospital care when her baby was born.

At the time of the survey seven physicians who were residents of the county served its 12,000 people. Thus there were about 1,700 persons to each physician, as compared with 726 persons per physician for the United States as a whole.<sup>3</sup> The county residents were not wholly dependent upon this small staff for medical attention, however, as physicians from bordering counties practiced in sections of the county within convenient range of their headquarters.

### **Inaccessibility of medical care.**

The difficulties of travel were a serious handicap in obtaining medical attention. "I allow you couldn't get a doctor to come over here any time," said the mother of one mountain-bound family. "Sometimes, they scarcely could get here. Horseback is the only way and not safe in winter."

The following story of the difficulty of securing medical attention for a mother at childbirth under such conditions is but one of many related:

A bad winter storm had set in when a young wife of 17, expecting her first baby, realized that the child was about to be born. The father started on horseback for the nearest physician, 8 miles distant, and was able to reach his office, but the doctor could not use his car on the roads and feared to attempt a horseback ride over the slippery roads and across creeks jammed with drifting ice. The father returned home alone and found the mother in labor. He then went over a high mountain to secure the services of a very old woman who practiced midwifery. She returned with him through the storm riding behind him on his horse. Although covering but a few miles, the route led over one of the highest and most difficult ridges of the county.

When it was found that the doctor, who had promised to come in the morning, had not arrived, a further attempt to secure him was made by the grandfather, who went on muleback. The doctor finally undertook the trip in a buggy but did not arrive at the mountain home until afternoon, seven hours after the baby was born.

When as a last resort the remote mountaineer is obliged to carry his sick wife or child to the doctor, the lack of good roads becomes tragic. One mother, suffering from childbed fever, endured with Spartan fortitude a wagon ride over 15 miles of rough road to the nearest physician. Another mother, 40 years of age, had been ill several months following the birth of her child. Her sufferings becoming acute, a drive to town to consult the physician was undertaken. The physician found that she was in a serious condition necessitating an operation. There was no place for this but her own home, and after the physician's examination the return trip over many long rough hills was made with the mother lying on two chairs in a homemade springless wagon.

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<sup>3</sup> State Board Statistics for 1920, *Journal of the American Medical Association*, April 30, 1921, p. 1248.

## MATERNITY CARE.

Marriage and motherhood come early to the mountain girl and large families are the rule. Three-fifths of the mothers included in the study were married before they were 20 years of age; 61 became wives before they were 16 and 9 before they were 14 years old.

Only 5 babies had been born to unmarried mothers, giving an illegitimacy rate of 10.1 per 1,000 live births for the mountain area. Statistics on illegitimacy which would afford comparisons with other rural areas of the South or with highland and lowland regions are not available, but the illegitimacy rate for the area studied was considerably lower than those of the States of North and South Carolina—14.8 and 16.9, respectively, per 1,000 white children born in 1919.<sup>4</sup>

### Large families.

Childbearing at frequent intervals is the rule among mountain women. Of the mothers married 10 years or longer, 44 per cent had had eight or more pregnancies. One woman 36 years of age was the mother of 11 sturdy sons. She was married at 12 years of age and had lost none of her children during the 24 years of her married life. A mother 38 years of age who had borne 12 children during the 22 years' duration of her marriage had lost but 1 child by death. But many other mothers who had given birth to children at frequent intervals were not so fortunate in saving them. One woman who had had 15 pregnancies and 14 live births, including one set of twins, had only 9 children living. Of her 14 live-born children 5 died, and she had had one miscarriage and one stillbirth.

Another mother, 37 years old, reported the birth of 14 children during her marriage, of whom 1 was stillborn and 3 had died in infancy. Even younger was the mountain mother of 34 years who had had 12 pregnancies in the 19 years of her married life, with four losses, two from miscarriage and two from death in infancy.

### Prenatal care.

From the replies of mothers who were questioned with especial reference to the care they received during their last pregnancy and confinement, it was learned that the great majority (86 per cent) went through the period of pregnancy without any medical supervision or aid whatsoever.

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<sup>4</sup> U. S. Bureau of the Census, Birth Statistics, 1919, p. 17.

Moreover, the care received by the 71 mothers who reported some medical attention during pregnancy must be classed as wholly inadequate. Five did not see a physician, but sent urine for examination, and of the 66 who saw a physician 47 had neither a physical examination nor an examination of urine. The majority of the mothers reporting visits to or from a physician had had but a single visit; and of the 18 reporting examinations of urine, half had had but one test made. Such care during pregnancy falls far short of the requirements for adequate prenatal care as outlined in previous rural studies of the Children's Bureau. These call for a complete physical examination; continued supervision by a physician through at least the last five months of pregnancy; monthly examination of the urine at least through the last five months; and, in case of a first pregnancy, measurement of the pelvis.<sup>5</sup>

Further analysis of the character of the care received by the 66 mothers reporting visits to or from a physician during pregnancy brings out the interesting fact that prenatal care was not sought as a necessary and normal part of the hygiene of maternity, but was obtained only when the mother become so ill during pregnancy that it was necessary to call a physician or when casual circumstances resulted in medical attention.

TABLE I.—*Mothers who saw a physician during pregnancy, classified by reason for visit and character of prenatal care received.*

Reason for visit to or from physician during pregnancy.	Mothers who saw physician during pregnancy.				
	Total.	Physical examination or urine test not made.	Physical examination or urine test made.		
			Total.	Urine examination only.	Physical examination only.
Total.....	66	47	19	13	6
For prenatal supervision.....	4	.....	4	2	2
Mother's illness.....	41	30	11	8	3
Related to pregnancy.....	32	24	8	6	2
From other causes.....	9	6	3	2	1
Physician called too soon for confinement.....	5	3	2	2	.....
Physician's visit incidental.....	7	7	.....	.....	.....
Reason not reported.....	9	7	2	1	1

Only 4 of the 66 mothers who saw a physician during pregnancy recognized the need of, and sought, prenatal supervision. Thirty-two consulted physicians because of complications arising during

<sup>5</sup> See *Maternity and Infant Care in a Rural County in Kansas*, by Elizabeth Moore, p. 28. U. S. Children's Bureau Publication No. 26, Rural Child Welfare Series No. 1. Washington, 1917. See also *Minimum Standards for Child Welfare* adopted by the Washington and Regional Conferences on Child Welfare, 1919, p. 7. U. S. Children's Bureau Publication No. 62. Washington, 1920.



pregnancy which incapacitated them; 9 sought medical aid for illness not related to pregnancy; 5 summoned aid for confinement, which did not occur until later; 7 saw doctors who were attending other members of the family or "happened to pass by"; and 9 did not report the reason for consultation. Some prenatal advice or treatment was secured by mothers who came under a physician's care for the reasons enumerated, but 71 per cent of the mothers had neither of two vital essentials to the safe conduct of pregnancy and confinement—a physical examination, and analysis of urine.

Good prenatal care is especially important for the woman bearing her first child, in order that such complications as eclampsia (convulsions) and those resulting from obstructions to labor may be avoided. The former disease may be warded off by proper treatment and diet, but its detection is dependent upon the examination of urine at frequent intervals. The requirement of complete physical examination and pelvic measurements is considered especially necessary in case of a first child to determine whether there may be any mechanical obstruction which will complicate labor.<sup>6</sup> Yet of the 89 mountain women facing motherhood for the first time, only 7 had had their urine examined and but 2 had had a physical examination with pelvic measurements. The death of a young mother in this group, who was married at 14 and gave birth to her first baby when she was 16, occurred a few months after her confinement. The following information was given by members of her family:

The young mother was not strong during her pregnancy. She consulted a physician but did not have an examination of urine. She had six convulsions during the week before her confinement and six more after the birth of her baby. She never regained her strength sufficiently to sit up for an entire day after the baby came, although she nursed the child until three weeks before her death, which occurred when the baby was about 4 months old. Members of her family stated that the physician who attended her did not inform them as to the cause of her death.

Another young mother, bearing her first child, reported a difficult delivery accompanied by convulsions. She had received no prenatal care, although she stated she suffered with "kidney trouble" during the last three months of the pregnancy. Swollen limbs and "kidney trouble" were complications of pregnancy frequently reported. A mother who said she "was not able to walk" for three months before her last confinement and "couldn't stand long enough to cook a meal of victuals" had received no prenatal care. Another mother going without treatment during pregnancy said she could not stand on her feet "more than five minutes at a time" during the last three

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<sup>6</sup> Meigs, Grace L.: *Maternal Mortality From All Conditions Connected With Childbirth in the United States and Certain Other Countries*, p. 12. U. S. Children's Bureau Publication No. 19. Washington, 1917.

months of her pregnancy. Of the 12 mothers who gave birth to still-born infants but 1 had had any prenatal care, and she did not see a physician until the last month of pregnancy.

Without minimizing the difficulties of securing medical care in this rural area, the fact remains that the mountain woman does not realize the need for the hygiene of pregnancy, so important to her own well-being and that of her child. From the character of the prenatal care given those mothers who received medical aid during pregnancy it is noted, further, that requisite measures which obtain in good obstetrical practice were not provided in the rural area. Yet "much must be said for the native mountain physician," writes John C. Campbell in *The Southern Highlander and His Homeland*. "At the best it is a hard life, riding by day and by night the rough trails that lead along creek, branch, and over mountain to isolated homes; and there is little reward save in the knowledge of duty performed. The oft-repeated criticism, 'He won't come unless he knows he can get his money,' must be tempered by adding that his field is far too large for him to serve, and that he may easily spend a whole day going 10 to 15 miles and back to see one patient."<sup>7</sup>

### **Attendant at birth.**

At confinement, 337 mothers—two-thirds of the entire group—were attended by physicians; but in 41 cases the physicians did not arrive until after the baby was born, although in time to give assistance. In 34 additional instances physicians were summoned but were not in attendance at birth, 27 arriving too late to perform any obstetrical service and 7 failing to answer the call. This meant a failure or partial failure of service in 20 per cent of the maternity cases to which physicians were summoned.

Many stories were told of futile attempts to secure a doctor, and of the anxiety and suffering of mothers in labor who were awaiting the arrival of medical aid. Often bad weather and bad roads frustrated the efforts of the county practitioner to reach a maternity case in time, or he was out on another case when called for maternity service and the mother was obliged to wait while a physician at some more distant point was sought. Not infrequently several villages were scoured before a doctor could be secured. The delay was lengthened if the messenger was obliged to go on foot or mule-back, as was frequently the case.

A mother was in labor from one day until the next while her husband spent the night on a roundabout trip to secure a physician. The doctor at the nearest village, 3 miles distant, was out when the husband arrived. He then drove 8 miles to another town and

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<sup>7</sup> Campbell, John C.: *The Southern Highlander and His Homeland*, p. 205. Russell Sage Foundation, New York, 1921.

found that the doctor there was on a case 2 miles farther distant. This physician was finally secured and reached the mother before the birth of the child.

A mother who was prematurely confined in midwinter explained that "it was cold and the snow on the ground was frozen" so that the physician did not arrive until late afternoon though the baby had been born and had died in the morning. An aunt had cared for the mother.

In one case the physician sent for started immediately upon receiving the call, but, although he was only 5 miles distant, the mother stated, it was "such a muddy and bad time"—in January—that he did not arrive until too late to be of any service. Her baby was stillborn.

A mother aged 17 told of the loss of her first baby, born when she was 15 years old: "My husband and I were young and didn't know how much there was to having children. We called a neighbor when labor pains began, but she didn't know what to do." After the mother had suffered 12 hours the father went for a physician, but he had trouble in finding one, as it was Sunday, and did not return with the doctor until another 12 hours had passed. In the meantime the baby had been born dead.

Fear that the physician would fail to reach them in time for delivery was the source of much worry among the mothers interviewed who tried to secure medical aid at confinement. Others admitted they had no hope of securing a physician and did not attempt to do so. "I never had a doctor when any of the children were born," said the mother of seven. "We lived too far, and he couldn't get there."

### **Postnatal care by physicians.**

Medical attention during the lying-in period, as during pregnancy, is not usually obtained by the mountain mother, for with the confinement services performed the care of the physician customarily ceases. In 77 per cent of the cases attended by physicians the mother was not visited after confinement. One return visit was made in 13 per cent of the cases. Only 17 mothers had three or more postnatal visits from physicians; and in the majority of such cases the physician's attendance was required because of complications following labor, although one mother stated her physician "always called to see how the mother was getting on." Her statement was in line with other evidence that postnatal supervision of maternity patients was to a large extent dependent upon the character of the practice of the individual physician. Regardless of the distance to be traveled, it was the custom of a few doctors to make at least one return visit to their patients. Others did not

revisit unless called because the condition of the mother was unfavorable.

### Physicians' fees.

The standard charge for medical attendance at childbirth was from \$10 to \$15. Ten dollars, the most common fee, was the charge in 169 of the 337 cases attended by physicians; in 83 cases the fee was \$15. While aftercare by a physician was considered a part of confinement service and no specific charge was made for postnatal visits in normal cases, postnatal attention was given more frequently by physicians charging the larger fee. Visits following confinement were made in 31 per cent of the cases in which \$15 was charged, as compared with only 15 per cent of the cases in which the fee was \$10.

The distance to be traveled apparently did not affect the cost of medical attention at childbirth. There was no mileage charge such as was made in the rural area studied in Montana, where the cost of confinement care depended chiefly upon the distance traveled by the doctor.<sup>8</sup> In fact, the actual distance between mother and doctor, although at times traversed with extreme difficulty, was not great for a rural area—in only 7 of the cases attended by physicians was it so much as 10 miles.

### Midwives.

As has already been noted, Georgia had no law regulating the practice of midwifery. In a bulletin issued by the Georgia State Board of Health in 1916 occurs the following statement about midwives: "They are particularly dangerous in Georgia, as this State does not require them to take a course of training or pass satisfactory examination. As a consequence, any woman, regardless of how dirty, ignorant, and diseased she may be, can be a midwife."

In all, there were 43 so-called midwives in the area, who had attended 139 confinements during the period of the study. They were known as "granny women," and were usually older women in the various communities who had brought up large families themselves and who had a considerable practice, even if limited to attendance at the births of their grandchildren and great-grandchildren.

There were 10 midwives in the area who had attended five or more childbirth cases during the period of the study. Of the 8 interviewed—1 had died and another had moved from the area—only 1 had received training. Although not a graduate nurse, she had had two and one-half years' hospital training. For the rest, the midwives of the county, while well meaning, were without even a rudimentary knowledge of the measures of cleanliness and asepsis

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<sup>8</sup> Paradise, Viola I.: *Maternity Care and the Welfare of Young Children in a Home-steaded County in Montana*, p. 56. U. S. Children's Bureau Publication No. 34. Washington, 1919.

required in obstetrical care. Moreover, they were steeped in the superstitions and practices of a bygone generation. The nature of obstetrical service given by the "granny woman" is shown by the following facts secured from the 7 untrained midwives interviewed:

None make special preparation for the cases. They carry no bag or equipment with them, using the family shears to cut the cord and whatever materials the family happens to have for other purposes. They wash their hands with soap and water but do not use antiseptics. The bed is prepared with pieces of old quilt and clean sheets, when available. Six make internal examinations; the other believes in "letting nature take its course." Teas of black pepper, black-gum bark, ginger, witch-hazel, and squaw vine are usually given to hasten the birth. Four midwives also give quinine. Five call physicians in cases of prolonged labor or hemorrhage, or when the afterbirth is not expelled. One midwife who said that she advised the family to call a physician in abnormal cases added: "But it is not much use, because it would take seven hours to get a doctor, if he was in his office and would come, but they hardly ever will come over here."

The midwives interviewed were from 50 to 80 years of age—six were over 60; their years of practice ranged from 30 to 50. Two could both read and write, three could read but not write, two could do neither. Their charges were from \$2 to \$5 for confinement services.

Incompetent as was the midwife to care for mothers in childbirth, it should be noted that in many cases mothers were solely dependent upon such care owing to the inaccessibility of medical aid. The service of the midwife was sometimes performed without pay, and even when a charge was made the services were often in the nature of neighborly accommodation. One midwife aged 64 said she did not want to practice, but people "send and insist." Certain mothers expressed a preference for midwives rather than doctors, giving as reasons the smaller charge for services, the longer stay (the midwife often gave nursing care and helped with housework), and a prejudice against having a man attend them in confinement.

Midwives did not arrive in time for delivery in 11 per cent of the cases they attended. The delayed arrival in one case caused the mother to be left entirely alone at the birth of her child and for two hours thereafter.

Nobody but a 2-year-old child was in the house with another mother when her baby came. She was too frightened to do anything for herself and waited alone an hour before her husband returned. A midwife arrived in time to cut and tie the cord and take the afterbirth.

Twenty-nine mothers gave birth to their babies without the aid of either a physician or a midwife. The father was the sole attendant at three births, and in the other cases relatives or friends did what they could for the mother.

### Complications.

With evidence limited to the statements of mothers who in a large number of instances received no medical attention and diagnosis for complications of pregnancy and confinement, it is impossible to arrive at an accurate measure of the prevalence and nature of such complications or of the extent to which they might have been prevented by good prenatal, obstetrical, and nursing care.

Definite inquiries were made concerning stillbirths, puerperal convulsions, premature and instrumental deliveries, and 40 mothers reported one or more of those complications. There were 28 premature deliveries, 12 stillbirths, 3 instrumental deliveries, and 3 cases of convulsions.

No attempt was made to secure statistics on many other complications of childbirth, including puerperal septicemia, known to be responsible for more maternal deaths than any other single cause. However, many mothers reported illnesses incident to childbirth, either giving a definite statement of disease as diagnosed by a physician or relating symptoms of serious conditions resulting from their last confinement. Childbed fever (puerperal septicemia), milk leg, "gathered" breasts, lacerations, and hemorrhage were among the complications reported.

Five mothers reported severe illnesses from childbed fever, lasting from three weeks to two months after confinement. Twelve had serious trouble with swollen limbs following confinement, including eight cases specified as milk leg. The death of one mother five months after her baby's birth was attributed by her husband to milk leg. Of two other mothers reporting milk leg, one was not able to be about until six weeks and the other until more than seven weeks after confinement. Both had physicians in attendance. A mother who had not received medical attention stated that her feet and limbs had been swollen throughout the eight months intervening between the birth of her baby and the interview—in the winter so badly that she could not get her shoes on. She had taken six bottles of one kind of patent medicine and sent \$5 to a vendor of cures who prescribed "vinegar in which rusty nails had been soaked." This mother had never had a physician in attendance at any of her nine pregnancies. The family was isolated, being 14 miles from the nearest doctor. Owing to her illness, the mother stated she had "cooked nary a meal of victuals or carried nary a bucket of water" since the birth of her baby.



PLATE III.—MOUNTAIN MOTHERS AND THEIR BABIES.





Ten mothers told of painful experiences with "gathered" breasts; in three cases physicians lanced them, in another case a physician was not called but the husband lanced his wife's breast with his jackknife on two occasions. "The breast has never given milk since," the mother added.

Three mothers reported complications due to retention of parts of the placenta. One of these had been attended by a midwife at confinement. Twelve days later she attempted to do her housework and had a hemorrhage, "nearly bleeding to death." A physician was summoned and found that the afterbirth had not been entirely removed.

Difficult presentations and prolonged labor were complications more frequently reported.

The foregoing incidents are given to show the nature of complications in certain cases where the symptoms or results were described, without attempting to estimate the amount of illness or invalidism consequent upon childbirth. In many instances, in fact, the mothers merely stated that they had had "a hard time" or "had not been well since." Moreover, the illustrations given are confined to experiences at births within the period selected for study. Mothers who had had a number of previous pregnancies related additional instances of complications at former births, not infrequently stating that they were still suffering from the results of such complications.

In gauging the value of the mothers' evidence, it should be noted that the mountain woman is not given to exaggeration or complaint of her ills. Her tendency is rather to accept as unavoidable many of the complications of childbirth which could be prevented by good prenatal and confinement care.

### **Mothers' work.**

The diversity of the duties devolving upon the mountain housewife makes her work complex and often burdensome. The care of the children, together with the ordinary housework, is no small task where households are large—six persons were the average number for the study—but in addition to a wide range of domestic duties the mother is called upon to perform many of the farm chores and to assist in working the crop.

The responsibility of preparing the winter supply of foodstuffs rests largely upon the mother's shoulders. Only a few of the most necessary staples are purchased. Curing meat; gathering, drying, and canning fruits and vegetables; and making soap, hominy, and sorghum, are all added to the routine of housework. Carrying water, milking, churning, and poultry raising are usual chores the year around and in seasons the mother helps to plant and garner the crop.

At intervals she still finds time for the interesting mountain handicrafts of weaving, quilting, and basketry.

Homemade bedding is displayed with much pride by the mountain housewife. Among the collections of pieced quilts exhibited by the mothers interviewed were many of intricate design, bearing quaint names—Dogwood, Gentlemen's Bow, Lazy Girl, Sugar Bowl, Rocky Mountain, Lone Star, Desert Leaf, Broken T, and others. The woven coverlid is less frequently seen. One mountain woman who was still weaving coverlids remembered the time when she wove all the family garments, but the spinning wheel and loom are gradually falling into disuse. One mother stated that she used to weave all the cloth used, but found it impossible to get "bunch" cotton now. Another explained that she couldn't spin and weave because of lack of linen and cotton thread. In a cabin where one of the beds was spread with a lovely coverlid of madder and black the grandmother who wove it said that she had made the tree dyes for it herself.

One of the most arduous daily tasks in the mountain home is carrying water from the spring. Of the families using springs, only one in three lived less than 100 feet from the water supply, and an uphill journey of a quarter of a mile or more was sometimes necessary. This work usually falls to the lot of the mother, three-fourths signifying that water carrying was one of their chores. Laundry work is done at the spring or branch to save carrying water, the clothes being boiled in a huge iron kettle placed over an open fire. More than four-fifths of the mothers reported churning, gardening, and poultry raising as usual occupations and seven-tenths did the milking.

Housework was performed without the services of hired help. In one-fourth of the families there were daughters 14 years of age or older, or women relatives, who shared in the housekeeping, and in one-fifth of the families the father or older boys aided in some of the household tasks; but nearly one-half of the mothers had no help whatever with their housework.

*Field work.*—The mothers had been accustomed to farm work from girlhood; 86 per cent reported field labor before marriage, and of these more than two-fifths had been in the fields before they were 8 years of age. "I began in the field when big enough to kill a weed" or "when big enough to hold a hoe," and "hoed corn at 5 years of age," were statements of mothers explanatory of their farm labor in childhood.

In the mountain county the "crop" is corn and "making the crop" is a family affair. "Dropping corn" in the planting season is light work participated in by the mother and the children, even to the toddlers. In a few weeks there follows heavier work with the hoe,

chopping out weeds and hilling up the earth around the plants, a process repeated several times. In July the crop is "laid by" until fall, when "pulling fodder" becomes another item of the mother's field labor. Picking beans and peas and digging potatoes were other field tasks frequently reported by the mothers.

"This mountain country is awfully rough on women," stated one father. "They can't hardly make a hand in the field, the fields are so steep."

So many demands upon the mother tie her closely to the home, and if she leaves the small children must go with her. One mother interviewed had just walked to the store, carrying her baby of 13 months for 4 miles in her arms.

*Work in relation to childbearing.*—Mothers who reported having had previous miscarriages stated that in some cases they were brought on by heavy work. Overwork and heavy lifting were causes given, and among the specific tasks followed by miscarriage were mentioned: "Carrying heavy milk pails," "hanging up meat that was heavy," "lifting tubs of water," "tossing corn on wagon," "carrying water," and "big washing."

It is the custom to continue housework up to the eve of confinement, with the exception of washing—and in fact more than half the mothers reported no cessation of laundry work before the birth of the baby. Almost three-fourths of the mothers also continued their chores to the time of confinement, and some mothers whose babies were born during the busy seasons of farm work reported no remittance of field labor prior to confinement.

Of a number of instances in which mothers performed heavy tasks when labor was imminent, the following are examples: One mother prepared the family meals, did a big washing, and churned on the day her baby was born. Another carried 2 gallons of water 100 yards uphill an hour before labor began. A third washed and scrubbed on the day of her confinement.

### **Care and rest following childbirth.**

Trained nursing service during the lying-in period and at least 10 days' rest in bed after a normal delivery, with sufficient household service for from four to six weeks to allow the mother to recuperate, are minimum requirements of care after childbirth.<sup>9</sup>

Trained nursing care was wholly lacking in the mountain county. A midwife or practical nurse was obtained by 27 mothers. About one-fourth were nursed by the father or by other adult members of the household, 7 reported care by children only, and the remain-

<sup>9</sup> Minimum Standards for Child Welfare, p. 7. U. S. Children's Bureau Publication No. 62. Washington, 1920.

der were nursed by untrained women secured from the neighborhood. More than two-fifths of these women took care of the mother as an accommodation, without pay.

As with the nursing service, the mother's chief dependence for extra help with the housework is upon her family or friends. One-fifth of the mothers had no additional assistance. Two-fifths hired some extra household help on account of pregnancy or confinement, the majority of those engaged being women who came for a short time after the confinement to act as both nurse and housekeeper.

Largely due to the lack of help, the mothers were up and at their work too soon. As early as the third day after confinement, a few mothers were upon their feet, and more than two-fifths had less than the 10 days' rest in bed considered essential. Sixty-seven women resumed their household duties less than two weeks after confinement; 36 were doing chores and 16 washed within that time. Before four weeks had passed, three-fifths of the mothers were doing all their housework except washing, two-fifths had resumed their chores, and one-fourth were doing the washing.

Thus before the mother has time to regain her strength, and with a newborn child to care for, she begins the work demanded by the many calls upon her.

## CHILD CARE AND INFANT MORTALITY.

Given safe-conduct through birth, the newborn child can have no greater asset than a mother equipped with a knowledge of the principles of infant and child hygiene. The mother's ability to bring her baby safely through the critical span of his first year and to insure him a healthy childhood rests largely upon her understanding of the requirements of feeding, cleanliness, sleep, clothing, and the hygiene and sanitation of the home.

### Illiteracy.

Aside from the advice of physician or nurse, the chief source of instruction is the increasing stock of informative literature relating to such subjects, including many publications issued free of charge by Federal, State, and private agencies. This avenue of knowledge was entirely closed to one-fifth of the mountain mothers because they were unable either to read or to write. The education of many mothers not only in this group but in the group reported as literate had been almost entirely neglected owing to the lack of schools or of the opportunity to attend school. Less illiteracy was found among the mothers from 14 to 30 years of age than among those who were older, indicating that educational advantages in the mountain area are improving. Of the mothers 30 years of age or over, one in every three could not read or write, as compared with one in seven for the group under 30. Such statements as "never had a chance in my time for schooling," or "there weren't schools within reach in here when I was little," or "we were brought up when there weren't any school," explained how many of the older mothers had been denied an opportunity for education. A mother aged 30 who was illiterate had gone to school for 12 months but had no book except a "speller." Another illiterate mother had gone to school four months but did not have a "reader." Isolation was responsible for much of the illiteracy among the older women, one stating that she "only went three or four days to a few schools" because the school-house was across a high mountain. Work in the house or field kept others from school attendance. "Would go a day and miss a week," stated one of the mothers deprived of an education because she was needed at home.

Even many of the mothers who were reported as literate—able to read and write—had learned but the barest rudiments during

a few months of schooling. Their limited education was attributed to long distances from school, home labor in house or field, loss of parents, and ill health.

One who had been kept at home to work on the farm went to school "off and on over wet days"; another had been able to attend "from time corn was laid by until time for picking peas"; another had not gone more than a month a year—"from time corn was laid by to fodder-pulling time." Mothers who were the oldest of large families said they had frequently been kept from school to do house-work. Some had learned to read and write at home. One mother had lived in the mountains where there was no school until she was 15 years old, then had moved to a place "where school held" but "was ashamed to go in primary classes." She stated she had learned her "a b c's" at home and could read and write a little.

Most of the mothers were mountain girls, but a few had attended graded schools in towns of the area or in some other vicinity. In all only 7 of the 505 mothers had completed the eighth grade.

One of the noticeable results of illiteracy was the inability of some mothers to give their exact age. "In our family we never had our ages put down," stated one mother who was not sure how old she was. Another who hesitated in giving the dates of birth and death of her baby said: "I can't read to keep up with the days on the calendar." Some of the babies with illiterate mothers had fathers who could read and write, and while in 32 per cent of the families one parent was illiterate, in less than 10 per cent of all families were both parents illiterate.

In some cases the father's skill in writing was limited to the ability to pen his signature. If he could also "read print," he was reported as literate.

### **Instruction in infant care.**

Only 86 mothers reported printed matter as a source of their information on child care. The fact that three-fourths of the mothers who were reported as literate, as well as the illiterate mothers, had had no guidance from the printed word can be attributed to the fact that little reading matter is found in the mountain homes, owing to the general lack of education. The handicap was more serious because neither the physician's advice nor the valuable and practical demonstrations of the public-health nurse were available—only 7 mothers had received instructions on infant care from a physician.

While the types of reading matter on the subject of child care included standard works, Government bulletins, and newspaper and magazine articles, in two-fifths of the cases only books of questionable value or worthless advertising matter had been read.

### Infant feeding.

Thrown so largely upon her own resources in caring for her babies, the mother relies upon the advice of relatives and neighbors, which results in the continuance of many unwise and dangerous customs. In no particular was this more marked than in the matter of infant feeding; and one of the greatest needs of the mountain mother is for modern, scientific instruction in methods of nurturing her young child.

While maternal nursing is universal in this section, there is a tendency to let the baby have solid foods at an early age. The mothers have not learned the risk young babies face when given a miscellaneous diet before they are 6 months old, and the custom of supplementing the natural infant food with articles of family diet counteracts the full benefits to be derived from nursing. The prevalence of this custom in the highlands generally has been a matter of frequent comment. "Babies from the first month are fed on anything they will swallow—grease, sugar, or strong coffee," writes Emma B. Miles in *The Spirit of the Mountains*. "If you object, the mother points with pride to her sturdy older children, never reflecting that in such a severe weeding-out only the well-nigh invulnerable survive."<sup>10</sup>

Feeding customs were haphazard in other respects, and rules for "feeding by the clock" were not generally observed. Because the baby's crying is invariably interpreted by the mother as a hunger signal, she is apt to feed her child both indiscriminately and irregularly. One mother whose baby was fretful nursed her almost constantly to keep her quiet. Many began giving solid food because the baby cried. "It would cry and I thought it was starved," said one mother whose baby was fed pickled beans, eggs, meat, and other food from the table when he was 3 months of age. One indulgent mother began mixed feeding when her baby was 3 months old because "it would watch me eat and it seemed like it wanted something, too."

Artificial feeding—the term used when no breast milk is given—was resorted to only in exceptional cases. Nine of the 497 live-born babies died before they were fed, but of the remaining babies only 2 never received breast milk, and the mothers who began to nurse their babies from birth with few exceptions continued the practice throughout the babies' first 9 months or whatever portion of that period was completed when the feeding record was secured. Only 14 babies had been weaned before they were 9 months of age. Death or illness of the mother and lack of sufficient milk were the causes

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<sup>10</sup> Emma B. Miles: *The Spirit of the Mountains*, p. 23. New York, 1905.

for weaning, with one exception in which necessity to work in the fields was the reason.

In fact many of the mothers nursed their babies beyond the period considered desirable. Of the infants who had reached their first birthday only 10 per cent had been weaned. At 15 months, three-fourths of the children who had reached that age were still being nursed, and even at 18 months more than one-half were kept at the breast.

In view of the varying ages of the babies for whom feeding records were secured, a consideration of the type of feeding at certain months of age for babies who had lived to complete the given months serves best to show the feeding practices:

TABLE II.—*Type of feeding received by infants completing specified month of life.*

Month of life.	Per cent of infants—			Month of life.	Per cent of infants—		
	Breast fed.	Mixed fed.	Artificially fed.		Breast fed.	Mixed fed.	Artificially fed.
First.....	91.5	5.8	1.0	Fourth.....	61.6	35.3	1.2
Second.....	86.4	10.9	1.1	Fifth.....	47.5	48.5	2.0
Third.....	77.8	18.8	1.6	Sixth.....	40.4	55.7	2.3

Of the 480 babies who survived their first month, 91.5 per cent were exclusively breast fed during the month. Thereafter, month by month, a marked decline in the proportion exclusively breast fed and an increase in the proportion given mixed feeding are noted. As early as the fifth month there were more babies receiving mixed diet than receiving mother's milk exclusively. In some cases cow's milk, alone or modified, was the only supplement to the mother's milk, but most of the babies on a mixed diet were more injudiciously fed. Buttermilk, sweetened coffee, sirup, butter, eggs, corn bread, meat, and potatoes and other vegetables were among the foods given in the first month. Some mothers who began giving their babies a mixed diet from the first month stated they gave "tastes of everything." A mother who gave supplemental feeding from the third day said it was her custom to begin feeding "as soon as they get to crying for something—whatever we eat ourselves we feed the children."

On the list of foods given babies who began receiving mixed diet after the first month but before the sixth were the following: "Canned stuff," "hog meat, mashed up with beans or potatoes," "sausage," "coffee with potatoes," "pickled beans," and "chocolate candy."

How serious had been the effect of such indiscriminate feeding it would be difficult to determine. Mothers interviewed with regard



to illnesses of the baby mentioned digestive disorders more frequently than any other cause of illness, and the deaths of four babies during the period studied were attributed by the mothers to gastrointestinal diseases. The feeding histories of these four babies show that none was exclusively breast fed throughout his lifetime. One, a twin baby, was not nursed after his third week because the mother did not have sufficient milk for two. Artificial feeding—cow's milk—was given from the third week until death at 7 weeks.

A second death was that of the fourteenth child of one mother. Owing to illness she did not have breast milk for the baby. She gave him cow's milk for two weeks, and then meat and vegetables and "anything he would eat." The mother chewed the food before feeding it to the baby. Death occurred shortly before the baby would have been 6 months of age. The mother stated that he had "spells of colic and much bowel trouble" prior to death.

The feeding of a third infant, who succumbed to "stomach trouble" at  $3\frac{1}{2}$  months of age, was changed from breast exclusively to mixed at 3 weeks and to artificial at 8 weeks. Mixed feeding was begun because of the scant supply of mother's milk, and the baby was weaned entirely at 2 months when the mother contracted typhoid fever. Cow's milk, crackers, rice, and potatoes were given the baby, but "nothing seemed to agree with it." Death occurred 6 weeks after weaning.

The fourth baby in the group was weaned at 6 weeks because the mother's breasts and the baby's mouth were sore. Cow's milk was fed the baby. The father went 18 miles over the mountains to consult a doctor, who did not come to see the baby or send medicine, but gave the father a prepared baby food. The baby continued to grow worse, developed "bowel trouble," and died at 5 months of age.

### General health.

Physical examinations of 108 children under 6 years of age were made at children's health conferences held at the conclusion of the survey in 10 community centers of the county. Town mothers, as well as country mothers, brought their children for examination by the Government physician, so that the group for which data on physical development were secured was not confined to children in families covered by the intensive survey.

An interesting comparison is afforded between the heights and weights of these mountain children examined and the average heights and weights of more than 165,000 white children under 6 years of age tabulated by the Children's Bureau from data secured in a nation-wide weighing and measuring campaign.<sup>11</sup> The average

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<sup>11</sup> Woodbury, Robert Morse, Ph. D.: *Statures and Weights of Children Under Six Years of Age*. U. S. Children's Bureau Publication No. 87. Washington, 1921.

statures of both boys and girls in the mountain county closely approach the averages shown for the boys and girls of the same ages in the national group.

The children in the mountain county were found to weigh more on the average than the children of the same statures included in the nation-wide study. The difference in average weight for height was slightly over a pound, when both sexes were grouped together; the difference between the two groups of girls was relatively slight, while the comparisons for boys indicated that those in the mountain group were on the average  $1\frac{1}{2}$  pounds heavier. In both studies the boys were found to be heavier than girls of the same ages or of the same heights.

It is a matter of general observation that the highland children come from a people of large physique. "Our highlanders are conspicuously a tall race," writes Horace Kephart in *Our Southern Highlanders*.<sup>12</sup> "Out of 76 men that I have listed just as they occurred to me, but 4 are below average American height and only 2 are fat. About two-thirds of them are brawny or sinewy fellows of great endurance."

Although their development as to size was average or above, more than three-fifths of the children examined had one or more physical defects. Defects of the skin and teeth were those most frequently found. In this respect the findings are in line with the verdict of John C. Campbell, for many years an educator in the highland South, who writes:

While specific data are wanting on many aspects of the health problem in the mountains, an opportunity to observe some of the effects of existing conditions upon the rural child and thus indirectly upon the general health, is offered in the various boarding schools maintained throughout this region by church and independent agencies. Naturally a large number of the pupils who come from little isolated homes show many evidences of the want of ordinary care of the person. The teeth, too, usually need attention, the only attention indeed commonly given them in very rural districts being to pull them out when they ache.<sup>13</sup>

Defective teeth receive little attention, because the dentist is even more inaccessible than the doctor in the mountain area. In addition to the menace to health from neglected teeth much discomfort and disfigurement result. Among the mountain families visited the lack of dental attention was particularly noticeable in young mothers whose teeth were badly broken or missing. One mother aged 25 had had her upper teeth extracted after the birth of her second child, when she suffered greatly with neuralgia. Two years later, at the time of the interview, she had no artificial teeth to replace those missing. The appearance of a mother 27 years of age was marred by the loss of

<sup>12</sup> Kephart, Horace: *Our Southern Highlanders*, p. 213. New York, 1921.

<sup>13</sup> Campbell, John C.: *The Southern Highlander and His Homeland*, p. 215. New York, 1921.



PLATE IV — MOUNTAIN CHILDREN



nearly all her teeth. Her little girl of 6 had a badly swollen face at the time of the interview, due, the mother explained, to a "holler" tooth which the mother was treating with medicine. Among young children discolored and broken teeth bore evidence that the parents were ignorant of the need for preserving the deciduous teeth as long as possible.

### **The snuff habit.**

The custom of dipping snuff was not uncommon among mothers and children in the mountain area. No specific inquiry was made concerning the habit but when mothers were using snuff at the time of the interview the fact was noted. Nearly two-fifths of all the mothers were thus reported as using snuff. The habit was more prevalent among older women; of the mothers 25 years of age or older 43 per cent were found using snuff, while only 30 per cent of the mothers under 25 gave evidence of the habit at the time of the interview.

The snuff is "dipped" from the can by means of a small twig or stick frayed at one end, and then spread over the surface of the teeth and rubbed from time to time with the stick. Snuff was used for toothache by one mother who, although only 28 years old, "hoped" soon to have all her teeth extracted. One mother explained that if the teeth were not rubbed they were more liable to decay, instancing the case of her sister who used snuff without rubbing, and had lost her front teeth.

One 8-year-old girl who had used snuff for two years said, "At first it tasted as sharp as pepper, but now when I am hungry it makes the hungry feeling go away just by rubbing it on my gums." Another little girl of 8 bit off a piece from a plug of tobacco and chewed it during the agent's visit to the mother.

### **Illnesses of children.**

In accounts given by the mothers concerning the illnesses of the babies under 2, diseases of the digestive tract were most frequently mentioned. Next in number came communicable diseases, with whooping cough and diphtheria most prevalent. By the term "risings" the mothers referred to swellings of various kinds, which included a number of cases of "swollen" and "running" ears. One baby's ear "burst and ran four times, once a month during the first four months," the mother said. "Colds" were frequently referred to, and it was noted that barefoot babies and those allowed to crawl about cabin floors, swept by drafts from the fireplace and open doors, were exposed to risk in cold weather.

A considerable morbidity among the older children from many causes was indicated by the mothers' reports, but no profitable discussion is possible because of the mothers' lack of credible informa-

tion as to the nature of the diseases. Communicable diseases had been the most common cause of illness among the older group.

In a few cases, helpless children were found in the mountain home. An epileptic boy of 10, helpless since he was 2 years of age, was constantly held in the arms of some member of his family. A little girl 5 years old, in another family, had lost the sight of one eye and could not walk. Her disease was diagnosed by the doctor as tuberculosis. This child was barefoot and crawling about the floor, although one of her limbs was seriously affected. Another child, injured at birth, was helpless for 6 years, and at 8 could walk a little but was "stiff-legged." Pathetic cases, where conditions were remediable, are instanced in the story of a boy of 14 whose mother said, "He can hardly see, but there is no place nearer than Atlanta to take him to get glasses that would be right"—a journey too long to be thought of. This boy was growing to manhood without an education because his poor eyesight kept him from school.

The difficulties in securing medical attention in the rural parts of the mountain county which were related in connection with the needs of mothers were repeated in the experiences of mothers with sick children. No better illustration of the serious import of the situation can be given than the fact that in the cases of more than two-thirds of all the babies in the group studied who died in their first year no physician was in attendance at the death.

In a few instances mothers told of treatment administered to their babies in cases of extreme need by men who were not regular practitioners. A mother who had lost her fourth child when he was 17 months old "had a doctor when the baby died, but he was a herb doctor, not a regular doctor." Treatment of a baby of 8 months by a "stock" doctor (veterinarian) was described by one mother in relating the circumstances of the death of one of her children. The baby had been very healthy, but began to "fret and vomit." The nearest physician had gone to a distant city, so another physician, 16 miles distant, was sent for the first day of the baby's illness. The father was absent from home and the neighbors, thinking it would be a long time before the physician could arrive, advised the mother to send for the "stock doctor." He came and gave the baby a "dose." The child died the next day, before the regular practitioner arrived.

### Maternal histories.

In addition to the more detailed data relating to infants born within the selected two-year period, a maternity history was secured from each mother giving the total number of her pregnancies, the resulting number of live births, stillbirths, and miscarriages, the

number of children who survived or died, and for the latter the age at death.

About half of all the mothers reported losses. The loss of potential child life from stillbirths and miscarriages throughout the childbearing history of these mothers was high. Of the total of 2,275 issues reported from all pregnancies 144 (6.3 per cent) were miscarriages and 66 (3.1 per cent of the total births) were stillbirths. The miscarriage rate is the highest found in any of the rural studies of the Children's Bureau. The percentage of stillbirths, also, is high in comparison with rates similarly computed for other rural areas surveyed—the highest except for a lowland county of North Carolina, where the percentage of stillborn white babies was 3.9. These rates, as exemplifying conditions in the mountain county, point again to the need for better prenatal and obstetrical care that the mothers may bring safely through birth the life conceived.

### **Infant mortality.**

Among the live-born babies the extent of loss is expressed by the infant mortality rate—the number dying under 1 year of age per 1,000 born alive. The mothers reported a total of 2,065 live births. Excluding the 291 babies who were under 1 year of age when the maternity records were secured, there remain 1,774 babies for whom an infant mortality rate can be computed. Among these children 135 failed to survive their first year, giving an infant mortality rate of 76.1.

This rate for the Georgia families is considerably lower than the highest rate (89) recorded for any of the rural studies of the Children's Bureau—the rate found for families in a northern county of Wisconsin. It is also exceeded by the rate of 80 for families in a mountain county of North Carolina, where conditions were somewhat similar to those prevailing in the Georgia area. The mortality among babies in Georgia, however, is much higher than that found in the rural areas of Kansas, Mississippi, Montana, and the lowland rural county of North Carolina.<sup>14</sup>

### **Losses in early infancy.**

Turning to the group of 497 babies born alive in the area within the two-year period, there were 28 deaths of infants under 1 year of age. Here the full extent of the loss of infant life for the entire group can not be accurately measured by the infant mortality rate, because more than half of the babies were under 1 year of age when their records were secured and some then alive may have failed to survive their first year. Moreover, omissions of some births and deaths are

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<sup>14</sup> Rates based on losses throughout family histories. In Mississippi and North Carolina the comparison is for white babies only.

probable where no official records are available and the house-to-house canvass covers so rugged a country.

For the second year covered by the study, March, 1917, to February, 1918, which immediately preceded the canvass, fewer omissions were likely because births and infant deaths of recent occurrence are more readily traced. Of the 291 live-born babies in this group, all had had a chance to complete their first month and all but 5 a chance to complete their second month of life by the time the information was secured. Therefore, an accurate measure of mortality in early infancy is permitted for the group. The infant deaths in the first month were 12 and in the first two months 16, the corresponding mortality rates per 1,000 live-born babies being 41.2 under 1 month of age and 55 under 2 months of age.

The first few weeks following birth are known to constitute the most perilous period of infancy, and these rates afford a comparison between the hazards of early babyhood in the mountain county and elsewhere.

In this connection it is interesting to note first that comparisons of infant mortality in city and country, shown by rates for the United States birth-registration area year by year since 1915, indicate somewhat lower infant mortality rates for rural than for urban communities, when the entire first year of life is considered.

TABLE III.—*Infant mortality, United States birth-registration area, 1915-1919.*<sup>1</sup>

Year.	Infant mortality rate.			Year.	Infant mortality rate.		
	Birth-registration area.	Urban.	Rural.		Birth-registration area.	Urban.	Rural.
1915.....	100	103	94	1918.....	101	108	94
1916.....	101	104	97	1919.....	87	89	84
1917.....	94	100	88				

<sup>1</sup> U. S. Bureau of the Census, Birth Statistics, 1920, p. 26.

No such difference in favor of the country baby exists, however, in the first month of life, during which deaths are known to be in large part due to natal and prenatal conditions—conditions which can be directly influenced by the mother's care during pregnancy and at confinement. In 1915, when the general infant mortality rate for city babies was 103 as compared with 94 for babies in rural parts of the birth-registration area, conversely the death rates under 1 month of age showed a higher mortality among rural babies, the urban and rural rates under 1 month being 43.4 and 46, respectively.<sup>15</sup> Statistics are not available whereby such comparisons for the birth-registration area can be followed year by year there-

<sup>15</sup> Unpublished figures of the U. S. Bureau of the Census, 1915.



after, but again for 1919 the appreciable advantage of the country baby denoted by the general infant mortality rate is lost when the rates under 1 month are compared—41.7 and 41.2, respectively, for urban and rural parts of the area.<sup>16</sup>

The rate of loss in the mountain county for the first month of life (41.2) was identical with that of the rural part of the birth-registration area in 1919, but in the first two months of life mortality in the mountain county, expressed by the rate of 55, was considerably in excess of that shown by the rate of 48.6 for the rural part of the registration area in the same year.<sup>17</sup>

A comparison of the death rate under 1 month for the strictly rural mountain area (41.2) with that for New York City (33.9—for white babies in 1919) shows a noticeable advantage for the large urban center where prenatal supervision has been stressed in a systematic campaign for the reduction of infant mortality.

That deaths in early infancy are largely preventable through proper prenatal supervision is even more strikingly illustrated in results obtained by the prenatal nursing service of the Bureau of Child Hygiene of New York City in 1918. The mortality rate under 1 month of age was 37 for the city as a whole, whereas among the group of babies whose mothers received the prenatal care afforded by the child-hygiene bureau it was reduced to 14.7.<sup>18</sup>

### Causes of death.

A further analysis of mortality in the mountain county by cause of death to show the extent to which the deaths occurring in the first and second months of life might be definitely ascribed to natal or prenatal conditions can not be made, because three-fourths of the babies in the group considered who died had no physician in attendance at death and the mothers' statements of causes contributing to death were indefinite. However, all deaths in the first month among the group considered, with one exception, are indicated as attributable to natal or prenatal conditions, either because the babies were prematurely born, because they died at 1 day of age or under, or because the mothers stated they were ill from birth until death.

The relationship, if any, between deaths in the second month and conditions at or before birth is obscured by the mothers' statements of cause. Such terms as "bold hives" and "pneumonia fever" were loosely used by the mountain women to indicate almost any infant ailment of serious character.

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<sup>16</sup> U. S. Bureau of the Census, Birth Statistics, 1919, Table II.

<sup>17</sup> Ibid.

<sup>18</sup> Monthly Bulletin of the Department of Health, City of New York, October, 1921, p. 233.



## USE OF PATENT MEDICINES AND HOME REMEDIES.

Patent medicines find a ready sale in the mountain county in spite of the widespread propaganda of recent years directed against the nostrum evil. As long ago as 1909 the dangers of the traffic in patent or proprietary remedies in general was brought to official notice by the Report of the President's Home Commission on Social Betterment, and the menace to babies was particularly emphasized in a section of the report on Infanticide by Systematic Drugging of Children. Referring to infant mortality, the report states: "In this connection it is desirable to point out the serious consequences of the systematic drugging of children by 'soothing sirups,' 'teething sirups,' 'children's comfort,' and 'the infant's friend,' etc., such compounds all containing opium or morphine, not to mention the numerous cough and croup remedies in the market."<sup>19</sup>

Federal legislation enacted since the report of the home commission, such as the Sherley amendment to the food and drugs act and the Harrison Antinarcotic Act, has made it increasingly difficult for manufacturers to market preparations of this sort. However, in a list of patent medicines used in the mountain families, compiled from the mothers' statements, there occur a considerable variety of "teething sirups," "cordial drops," "cough remedies," and other nostrums—some known to contain opiates. Nearly 50 per cent of the babies included in the study, all under 2 years of age, were given patent or proprietary medicines of some kind.

In all cases these preparations were referred to as "patent medicines" and are so called in this report without reference to the real distinction between patent and proprietary compounds, explained as follows in the Report of the President's Home Commission:

By the term patent medicine, as properly employed, it must be understood that the composition is known and can be seen at the Patent Office. The proprietary medicine is a secret preparation protected by a trade-mark, and hence preferred by the owner, but both are vaguely termed by the public patent medicines.<sup>20</sup>

### Federal food and drugs act.

A number of the patent medicines on the list of those given babies in the mountain county have been analyzed by the Bureau of Chem-

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<sup>19</sup> Reports of the President's Home Commission, Senate Document No. 644, p. 266. Washington, 1909.

<sup>20</sup> *Ibid.*, p. 263.

istry, United States Department of Agriculture, and declared misbranded under the Federal food and drugs act. Under this measure Federal control is exercised over products that enter into interstate commerce. The act requires that a declaration as to the presence and amount of 11 drugs, including alcohol, morphine, opium, and chloroform, be made on the trade package of a medicinal preparation; and the manufacturer may be declared guilty of misbranding if he makes false or fraudulent statements on the label of a medicine or in the printed matter accompanying it regarding either its composition or its curative value.

### **Patent medicines given babies.**

The following examples of certain patent medicines declared misbranded under the act will suffice to show the nature of some of the preparations given babies:<sup>21</sup>

One of the remedies most commonly used for the mountain babies contained approximately 36.1 per cent of absolute alcohol and 3½ mls. of tincture of opium in 1,000 mls. of the article, at the time when it was analyzed by the United States Bureau of Chemistry. Misbranding of the article was alleged because the label did not bear a correct statement of the amount of alcohol and opium contained and—

for the further reason that certain statements appearing on the wrapper falsely and fraudulently represented it to be effective as a remedy for all fluxes, spitting of blood, agues, measles, colds, coughs, and to put off the most violent fever; as a treatment, remedy, and cure for stone and gravel in the kidneys, bladder, and urethra, shortness of breath, straightness of the breast; and to rekindle the most natural heat in the bodies by which they restore the languishing to perfect health; whereas, in truth and in fact, it was not.<sup>22</sup>

Another remedy used which was claimed to be effective for diarrhea, dysentery, etc., and as a remedy for ailments of teething children, contained both alcohol and morphine and was so labeled. It was declared misbranded because the label did not contain a correct statement of its alcoholic content and because the representations on label and carton—

were false and fraudulent in that the same were applied to the article knowingly, and in reckless and wanton disregard of their truth or falsity, so as to represent falsely and fraudulently to the purchasers thereof, and create in the minds of purchasers thereof the impression and belief, that it was, in whole or in part, composed of, or contained, ingredients of medicinal agents effective, among other things, as a remedy for all cases of cholera, diarrhea, dysentery, and flux, for restoring the bowels to their normal condition, and as a remedy for ailments of teething children, when, in truth and in fact, it was

<sup>21</sup> Specific samples of patent medicines used in the homes of the area were not analyzed, but the descriptions quoted from notices of judgment show the contents of samples of the same medicines analyzed by the U. S. Bureau of Chemistry when cases against their manufacturers for violation of the food and drugs act were pending.

<sup>22</sup> Notice of Judgment No. 6222, Federal food and drugs act.

not, in whole or in part composed of, and did not contain, such ingredients or medicinal agents.<sup>23</sup>

Analysis by the Bureau of Chemistry of one of the cough and croup remedies used showed it to be an alcohol-water solution, containing ammonia, glycerin, pine tar, sassafras, red pepper, reducing sugars, a laxative drug, and alkaloids. The manufacturer was fined \$100 for falsely and fraudulently claiming the preparation was a cure for croup, whooping cough, etc.<sup>24</sup>

The largest percentage of alcohol contained in any of the patent medicines given children, which had been declared misbranded, was a substance containing 60 per cent of alcohol, by volume, and in which chloroform, ether, and red pepper were present, according to analysis by Federal chemists. It was claimed to be a panacea for internal and external use and was sold as a cure for diphtheria, bloody flux, inflammatory rheumatism, la grippe, and all aches and pains. These claims were declared false and fraudulent and applied knowingly, and the company was fined \$50 and costs.<sup>25</sup>

The mother of a baby who died at 31 days of age said the only remedy she had given her baby during his illness was a patent cough medicine. The composition of this preparation, according to the label of the bottle showed by the mother, included 11 per cent of alcohol, and 2½ minims of chloroform to each fluid ounce. Another mother showed a bottle of "baby bowel medicine," half of the contents of which she had already given her baby, 4 months old at the time of the interview. This remedy, as labeled, admittedly contained 7 per cent of alcohol. Neither of these preparations is mentioned in the records of judgments secured under the Federal food and drugs act.

### **Patent medicines used by pregnant women.**

More than 20 per cent of the mothers interviewed had taken patent medicine during their last pregnancy. The list of such preparations included 22 varieties, some advertised specifically "to make childbirth easy" and others being either remedies for "female weakness" or "kidney trouble," or general "cure-alls." The following example of the alluring promises made by the vendors of one nostrum on the list leads to an understanding of the use of patent medicines by pregnant women in a community where prenatal care by a physician is not readily available to mothers and where public-health aid is nonexistent. The misbranded article at the time of investigation by the Bureau of Chemistry bore on its label the following:

For the relief of the suffering incident to childbirth. This is one of the greatest comforts to those expecting to be confined. It is a remedy upon

<sup>23</sup> Notice of Judgment No. 4838, Federal food and drugs act.

<sup>24</sup> Notice of Judgment No. 5271, Federal food and drugs act.

<sup>25</sup> Notice of Judgment No. 4414, Federal food and drugs act.

which confidence can be placed, one that will assist in a safe and quick delivery, and one that shortens the duration of labor. Try it. It is a blessing to suffering women \* \* \* has been used by many of our best physicians and all pronounce it a success, giving relief from the dreadful pains and sufferings of this time. Every woman expecting to become a mother should use it.

The notice of judgment states that—

[The] form of labeling was false, misleading, and deceptive and tended to deceive and mislead the purchaser into the belief that the product contained in the bottles was a drug valuable for the alleviation of the suffering incident to child bearing, whereas, in fact, the bottles contained a liquid consisting essentially of an oil, together with a small amount of soap, and had not the properties claimed for it upon the label.<sup>26</sup>

The continued sale of this article, after its exposure, points to the conclusion that such preparations continue to be marketable, owing to the fact that little publicity is given to their exposé and that the fines imposed upon manufacturers for misbranding are small. In some instances, however, the manufacturer may be obliged to change the formula for his nostrum or to modify his claims for its curative value.

An alcoholic nostrum shipped from Tennessee to Georgia, and used by some of the mothers during their pregnancy, contained 16½ per cent of alcohol, according to the analysis of the United States Bureau of Chemistry. A notice of judgment under the food and drugs act states that misbranding of the article was alleged in the information for the reason that certain statements on the carton, bottle, and accompanying circulars were—

false and fraudulent in that the same were applied to the article knowingly, and in reckless and wanton disregard of their truth or falsity, so as to represent falsely and fraudulently to the purchasers thereof, and create in the minds of purchasers thereof the impression and belief, that it was, in whole or in part, composed of, or contained, ingredients or medicinal agents effective, among other things, as a remedy for all female weaknesses and diseases, in the relief of all hemorrhage from the womb, as a cure for leucorrhea, and for correcting all irregularities peculiar to women, when, in truth and in fact, it was not, in whole or in part, composed of, and did not contain, such ingredients or medicinal agents.<sup>27</sup>

The defendant company entered a plea of guilty to the information and the court imposed a fine of \$75 and costs. Although the judgment of misbranding in this case, secured in 1915, clearly set forth the inefficacy of the product, it was used during the following two years by mothers of the mountain county and was widely advertised in 1918 in the community surveyed by means of an almanac. In this almanac the nostrum is advertised by the testimonial method, its praises being set forth in letters secured by the manufacturer

<sup>26</sup> Notice of Judgment No. 366, Federal food and drugs act.

<sup>27</sup> Notice of Judgment No. 4389, Federal food and drugs act.

from persons claiming benefit. "Read these letters carefully," the almanac advises, and—

you will understand why we place an unqualified guarantee on this great medicine for women's ills. You will understand that we guarantee it because it benefits women. This is our reason why we continue from year to year to guarantee it, but an equally satisfactory reason is that the sales grow larger each year by many thousands of bottles, while the failures do not increase in proportion.

A so-called "quick relief" on the list of patent medicines used by mothers when analyzed by the Federal chemists was found to contain 32 per cent of alcohol, together with Peru balsam, camphor, and red pepper.

The most common remedy used was an alcoholic nostrum widely advertised as a "woman's tonic." Analyses made public by the American Medical Association have shown that aside from alcohol the nostrum contains no potent ingredient in quantities capable of producing any physiologic effects.<sup>28</sup>

One mother showed a box of tablets obtained from a mail-order concern labeled "for diseases of women and the alleviation of the annoyance of pregnancy and the pains of childbearing," which she had taken during pregnancy and liked "because they made me sleep."

The foregoing instances refer only to preparations used by pregnant women and little children; in other instances the use of nostrums for various ailments by all members of the family was additional evidence of the frequency with which the patent medicine bottle found a place on the shelf of the mountain cabin.

### **Teas used for medicinal purposes.**

More time-honored remedies in the highland region are the home-made teas of herbs and roots gathered in the mountains. A list of those named by mothers as used for medicinal purposes included teas made from wild cherry, pinkroot, boneset, white horsemint, spignet, pennyroyal, black snakeroot, ginseng, lady's-slipper, red alder, butterfly root, and many other mountain herbs. For babies with "hives," teas of catnip, dog fennel, ground ivy, and partridge berry (also known as hive vine and squaw vine) were mentioned as remedies. Salves as well as teas were made from herbs, one mother's recipe for a cold and croup salve calling for fever weed, garlic, peach tree, and elder "fried up." Thirty-two mothers had given their babies paragoric and 10 told of the use of whisky as a home remedy for their infants. A combination of 4 drops of asafetida and 4 drops of whisky in a teaspoonful of milk was one remedy given; tincture of lobelia and whisky was used for a baby with intestinal

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<sup>28</sup> Cramp, Arthur J.: Nostrums and Quackery. American Medical Association, Chicago, 1921.

trouble; and whisky in breast milk had been fed by a third mother to a baby about 2 months of age.

### **Other home treatment for babies.**

"Scarifying" is the mothers' designation of a curious practice, similar to the old-fashioned blood-letting, which is sometimes resorted to as a "baby cure" in the mountain county. The impression prevails that the disease known as "bold hives" is caused by "too much blood," hence the treatment described by one mother as follows:

You wash the baby between his shoulders with warm water and soap. Then make three little slits in the shoulder flesh with a razor. Warm a horn and put the large end over the slits in the skin. Put beeswax over the small end and make a very small hole in the wax with a pin and suck up through the hole and close it by pinching the wax together. The horn will stay on until it has drawn about a teaspoonful of blood. Then it will fall off. It is this blood that causes the hives. You can see it's all dark and hard.

The mother of another baby, scarified for hives when he was 3 months old, said that she "washed baby's back, slit it a little, sucked the blood and washed it off." A 1-month-old baby, according to the statement of his mother, was "scarified" every other morning until nine such operations has been performed. Each time from three to five drops of blood were taken. Afterwards the spot was greased and the mother reported that it "healed in no time."

Home treatment of babies in some cases appeared to be based on superstition. A mother whose 4-months-old baby had had colic tried to cure her by "smoking over bran." The mother stated she put bran on the hearth, set it on fire, and held the baby over the smoke. When the treatment failed to cure the baby the mother resorted to the use of patent medicine.

"Dirt tea" was the home remedy given a 7-weeks-old infant suffering from intestinal trouble. The mother prepared the tea by "scraping soot from the back of the chimney, where it was burned, and pouring boiling water on it." Other home remedies given this baby were "drops of all kinds," paregoric, and patent medicine.



## HOUSING AND SANITATION.

Two prevailing types of houses in the mountain county are the pioneer log cabin, often the identical structure fashioned by a forefather, and its successor, the box house, erected since the advent of the sawmill. The latter is usually made of upright undressed boards battened as a protection from the elements. The clapboarded frame cottage of better finish is not so frequent a type, although found on farms near town.

The mountain home site is often one of extreme beauty. If it is located on a "branch," to insure a convenient water supply, the approach in spring is past thickets of blooming dogwood, rhododendron, and laurel which line the stream, and over fields of mountain wild flowers. The homes situated upon the heights have more barren surroundings, but their sites are vantage points commanding imposing vistas of the highland region with its panorama of mountain peaks. The appeal of the picturesque cabin in its attractive setting can not, however, divert attention from its deficiencies. As a rule the homes are overcrowded, dark, and lacking in convenient arrangement and equipment for the housewife.

### Congestion.

The number of occupants in the households visited ranged from 2 to 12, the average being 6 persons per dwelling. This included the immediate family and relatives or others living with them. Nearly three-fourths of the families were occupying small houses of one, two, or three rooms. Sixty-eight families—14 per cent of all visited—were living in houses with but one room. The number of occupants in these houses ranged from 2 to 10 persons, and in half of the households limited to a single room there were 5 or more persons. In the two-room cabins which housed one-fourth of the families, the living room was also a bedroom, with a lean-to for a kitchen, or there was a living-room kitchen with a smaller room adjoining for sleeping purposes. Only 5 per cent of the homes had more than five rooms.

Number. Per cent.			Number. Per cent.		
Total	505	100	Total	505	100
Houses with—			Houses with—		
1 room	68	14	1 bedroom	194	38
2 rooms	121	24	2 bedrooms	244	48
3 rooms	174	35	3 bedrooms	56	11
4 rooms	74	15	4 bedrooms	9	2
5 rooms	42	8	5 bedrooms	2	1
6 or more rooms	26	5	6 or more bedrooms	---	---

For parents with but one or two young children the small house sufficed; but, because it was not customary to enlarge the home to accommodate the enlarged family, cramped living quarters were common. In a county where timber is plentiful the cause of congestion could not be attributed entirely to economic necessity.

The following examples show conditions in three families of varying sizes, each of which was limited to the one-room house.

A family of four—father, mother, little girl of 4 years, and a baby 9 months old—lived in a one-room frame house situated on a mountain side barren of trees. Although the house was windowless, its interior presented a cozy appearance at twilight. A bright fire blazing in the fireplace lighted up the room. The furnishings included two beds covered with white counterpanes, dresser, table, and tiny cookstove. A fresh "ironing" hung from a line at one side, and in another corner strings of dried corn dangled from the ceiling. Everything was clean. The mother had made for the baby a simple creeping-pen out of a box. (Such a pen is a great advantage, as most cabin floors are rough and "splintery" even if not dirty, and the unscreened fireplaces are a menace to creeping children.)

Father, mother, and four children, the oldest 12 and the youngest a baby of 6 months, lived in another one-room cabin. There were no windows, but two doors were kept open to light the interior when the weather permitted. The room, about 20 feet square, was crowded with three beds and a long table with benches upon each side. There were no other furnishings, the fireplace being used for cooking.

A small log cabin with broad stone chimney stood at the foot of a steep hill and could be reached only by trail, being about  $1\frac{1}{2}$  miles from the road. It was on a farm yielding no produce for marketing and scarcely enough for the family livelihood. On the hills beyond the cabin clearing, a few tall pines spared by the sawmill towered high above a thick new forest growth. Home-made farm implements, sled, primitive harrow, and yoke cluttered the doorway. Occupying the one room of this home were the father, mother, and six children ranging in age from 1 to 13 years. The interior of the cabin was disorderly, a natural consequence when eight people with all their possessions and supplies are crowded into one room.

### Crowded sleeping quarters.

From the standpoint of health the crowding of sleeping quarters was a serious problem. In two-fifths of the homes visited there was but one sleeping room, and it was not unusual to see three or four beds in the same room. From a tabulation of the number of persons in the household according to the number of sleeping rooms was derived the following statement of persons per sleeping room, which gives an index of congestion in all homes included in the study.

Average number of persons per sleeping room.	Number.	Per cent.
Total-----	505	100
1, less than 2-----	33	6
2, less than 3-----	120	24
3, less than 4-----	121	24
4, less than 5-----	99	20
5 and over-----	132	26

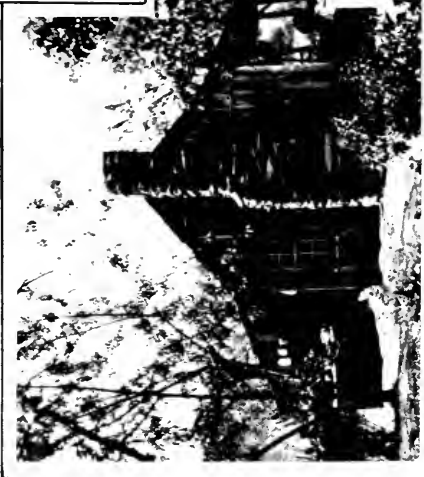
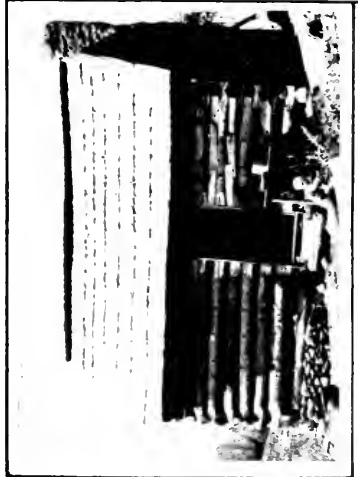
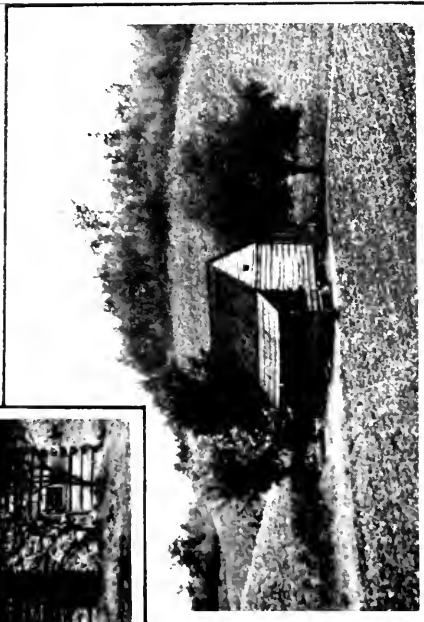


PLATE V.—TYPES OF MOUNTAIN HOUSES.



No family had a spare room, very few a bedroom for each member; and in more than one-fourth of the houses, there were five or more persons per bedroom.

The menace to health from such congested sleeping quarters was increased when there was illness in the family, and the sick member slept in the same room, often in the same bed, with those who were well. In one family of 10 occupying one bedroom the 8 children, including a baby of 4 months, had whooping cough at the same time. During illness it is customary for neighbors to gather at the bedside of the sick person, thus adding to the household congestion. One mother sought for an interview was found with her baby in a neighboring home where a woman lay seriously ill. With her child, she and four other women were crowded about the bedside of the afflicted neighbor in a stifling, windowless room. In another home visited a typhoid fever patient—a boy of 8—lay in bed in the living room surrounded by father, mother, and three men of the neighborhood. In addition to the noise of conversation a telephone in the room rang frequently, for every ring on a rural telephone is heard by each subscriber. The mother consented to be interviewed on the porch, but neither she nor her husband and neighbors seemed to realize that so much confusion was bad for the sick child.

The lack of privacy was another serious consequence of the crowded sleeping quarters for growing children of both sexes. A family of 10, consisting of father and mother, 3 girls aged 17, 13, and 8, 3 boys aged 16, 12, and 10, and 2 younger children, were limited to one bedroom.

In a log cabin with one bedroom and a lean-to kitchen, which housed a family of six, the bedridden grandfather was ill in the same room in which the mother was confined, their beds being in close proximity.

### **Houses without windows.**

The lack of windows in a number of homes proved a defect more serious in lighting than in ventilation, for many houses were of such loose construction that fresh air came in through the crevices. In some of the dark rooms daylight could be seen through the unchinked logs or through gaps between the chimney and siding. Only 15 per cent of the homes were ceiled or plastered, the remainder being boarded, roughly papered, or without any interior finish. Where window frames were provided there was often no glazed sash, the openings being covered with wooden shutters.

### **Attractive features of mountain homes.**

In spite of the frequent defects of insufficient space, light, and equipment, many of the mountain families had succeeded in achiev-

ing genuinely attractive homes. Vines added to the exterior attractiveness of the houses. The crimson rambler, trumpet vine, myrtle, ivy, and fragrant wild honeysuckle trailed over the weatherbeaten logs with softening and beautifying effect. One mountain home visited was covered thick with ivy and had a bed of brilliant tiger lilies in front. The yards were usually bare of grass, but even the poorest cabins seldom lacked a flower garden in which might be found roses, iris, columbine, syringas, the snowball bush, and many other varieties of shrubs and flowers.

An interior with deep fireplace, wooden mantel blackened like ebony by smoke, high soft beds covered with gay quilts or coverlets, splint-bottomed chairs, strings of red corn, "shucky" bean pods, peppers, and herbs hanging from the beams, and the spinning wheel, fallen into disuse but not deposed from its honored nook by the fire, gave an impression of beauty and comfort achieved by the mountain home-maker.

### Household equipment.

House furnishings were simple, sometimes consisting merely of beds, tables, and plain chairs. Families with more complete domestic equipment had in addition chests, bureaus, center tables, clocks, and window shades. Pantries were rare, and unless a loft was available for storage space the reserve food was hung from rafters or sacked and stowed away in convenient corners.

Nearly every house visited was sadly in want of modern conveniences for the farm home. In a list of a dozen such items considered necessities in the rural home of to-day only one—the sewing machine—was found to be a usual article of equipment.

The sink, bathtub, indoor toilet, and other conveniences dependent upon running water, as well as power machinery to lighten such household tasks as churning and washing, have yet to reach the mountain home. In fact, only 25 housewives had water conveniently at hand in the house or on the porch. The spring house, the only means of refrigeration, was often some distance from the kitchen.

Few families had stoves for heating and even the kitchen stove was by no means universal, many housewives cooking in the open fireplaces. Dinner for six was being prepared at the hearth of one family visited. Corn bread was baking in a shallow iron kettle, coals being placed on top of the lid and underneath the kettle. The mother stated that if the kettle was heated well first, the bread baked better than in a stove. She broiled ham in a pan, around which the flames licked, and served a simple but appetizing meal of corn bread, ham, and honey. In many homes provided with cook-stoves the housewife preferred the fireplace for her "kettle of beans" or other food which required time in cooking.

The dearth of labor-saving devices for the mothers in the area studied is emphasized by a comparison between the equipment in their homes and that in rural homes in other sections of the country. Data secured by home-demonstration agents of the United States Department of Agriculture in 1919 for farm homes in the eastern, central, and western sections of the United States permit a comparison.

TABLE IV.—*Household conveniences in mountain and other rural sections.*

Area.	Per cent of rural homes having—						
	Tele- phone.	Sewing machine.	Washing machine.	Screened windows and doors.	Water in kitchen or on porch.	Bathtub.	Sink.
The mountain county.....	3	68	2	6	5	( <sup>1</sup> )	1
Rural areas in other sections <sup>2</sup> ...	72	95	57	96	65	20	60

<sup>1</sup> Less than 1 per cent.

<sup>2</sup> From the Farm Woman's Problems, States Relation Service, U. S. Department of Agriculture.

<sup>3</sup> In kitchen only.

### Lack of toilets.

The general lack of toilets of any kind in the area indicated widespread ignorance of the essential principles of home sanitation. The rural residents of the mountain county, like those in many districts of the rural South, have not learned the dangers of soil pollution. The sanitary survey conducted by the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease, 1911-1914, revealed the amazing fact that of a quarter of a million farm homes in 11 Southern States more than half were without privies.<sup>29</sup> Even a larger proportion of homes in the mountain county lacked this essential of sanitation, 85 per cent being without toilets of any kind; and of the privies provided at the remainder of the homes half were of the insanitary, open-back type.

The menace of flies was increased owing to the lack of toilets, the open-back privy, and the disposal of waste water in the yards, yet only 31 homes had adequate screening. Many mothers, however, took the precaution of protecting their sleeping babies from the numerous flies by the use of mosquito netting or cheesecloth thrown over the bed.

### Water supply.

Four out of every five families secured their water supply from springs. The clear, cold spring water is much prized and no thought

<sup>29</sup> Fifth Annual Report, The Rockefeller Sanitary Commission for the Eradication of Hookworm Disease, 1914, pp. 12-13.

is given to the contamination which may result from seepage of polluted water through the soil above, from the direct flow of surface water into the spring, or from dipping soiled utensils into it. Both springs and wells were found in some cases below the house, barnyard, or hogpen, where they were liable to pollution by seepage. As a rule, the springs were not protected from the wash of rain water carrying surface filth, a heightened menace where soil pollution is caused by the lack of toilets.

### **Typhoid fever.**

Without mortality or morbidity statistics for the county, it is impossible to show for any period the fatalities from or the prevalence of diseases attributed to impure water and lack of sanitation. The replies of mothers interviewed concerning previous illnesses in their families indicated a considerable prevalence of typhoid fever in the mountain county, but its extent could not be estimated because many cases reported had not been diagnosed by a physician. The following instances are those of cases diagnosed by a physician:

A few weeks after a mother gave birth to a baby who lived but a short time, three of her daughters, aged 17, 8, and 6, became ill with typhoid. The mother stated the attending physician did not inquire about the water supply, but that they had had trouble with their well. "It was in a low place and got to filling up with water. It hadn't been cleaned for two years. We cleaned it out three times that summer, but when the fall rains came and there was so much water in the ground, it was a regular flood." The poor water supply caused the family to move to a home where there was a good spring.

Another mother, questioned about the source of the water supply at the time when one of her children had typhoid, stated that they used water from both a spring and a well. "The spring was muddy and full of leaves," she said, "and the well was full of old tin cans and the water was milky."

Water for another family was secured from a spring used by seven families. The privy at this home jutted over a small stream at a point where it was crossed by a footlog leading to the barn. The mother stated that her 9-year-old son contracted typhoid two months before her baby was born. She did not know whether he was infected at home or elsewhere, but said that shortly before he was taken sick he accompanied her on a visit to a neighboring home where there were six cases of the disease.



## STATE HEALTH ACTIVITIES RELATING TO MATERNITY AND INFANCY.

Rapid strides in public-health achievement in Georgia since the study covered by this report was made are denoted by a survey of the work accomplished by the State up to the close of 1921. Noteworthy results, especially in the protection of maternity and infancy, were obtained through legislation and an exceptionally vigorous and effective administration of the State board of health.

### Birth and death registration.

At the time of the Children's Bureau survey, records of vital statistics for the mountain county were nonexistent, a situation which obtained generally for the rural areas of Georgia. Although an act embodying the provisions of the model law for the registration of births and deaths passed the Georgia Legislature in 1914, the finances for its enforcement were not provided until five years thereafter. Therefore, the bureau of vital statistics in the State department of health was not organized until January 1, 1919. With the creation of the bureau, plans for the enforcement of registration in Georgia were at once pushed forward. Justices of the peace and city clerks who act as local registrars were instructed in the duties of registration. Every physician and undertaker in the State was called upon for aid and was furnished with the necessary registration blanks.

Early returns of certificates indicated that about one-fourth were incorrect or incomplete, owing to unfamiliarity with the law. In a systematic endeavor to make registration accurate as well as complete, the State bureau demanded corrections by physicians, undertakers, and registrars, with a resulting improvement in the character of the work. Prosecutions of those who failed to obey the law followed. Therefore, although the first year of enforcement was of necessity devoted mainly to organization, by the close of the year every county in Georgia was responding to the law.

Georgia was then one of the three States east of the Mississippi River that had not yet gained admission to the United States death-registration area. Improvement in registration continued throughout 1920 and 1921; in the latter year the registration of deaths was accepted by the United State Bureau of the Census as at least 90 per cent complete, and Georgia was admitted to the death-registration area January 1, 1922.

Birth registration, in Georgia as elsewhere, is more difficult of enforcement than the registration of deaths. Many States with satisfactory legislation of long standing have failed to bring birth registration up to the standard required for admission to the birth-registration area. With a background of only three years' work for enforcement, birth registration in Georgia is not yet sufficiently complete to warrant admission to the area. The bureau of vital statistics is working earnestly to perfect birth registration, and if the same progress which has resulted in effective death registration is maintained, admission to the birth-registration area will not be long delayed.

### **Mortality statistics.**

In addition to its active campaign for registration, the bureau of vital statistics has made some analyses of the data secured from the death certificates. Thus, for the first time in the history of Georgia, statistics are available whereby the State can gauge the extent and causes of its mortality. The classification of deaths in 1920 by cause shows a significant comparison between mortality from certain causes affecting infants only and mortality from important causes affecting persons of all ages. Influenza, tuberculosis, and pneumonia were the diseases which caused the largest numbers of deaths in Georgia in 1920, named in the order of importance. Yet among infants under 2 years the deaths from diarrhea and enteritis combined with the deaths from causes peculiar to early infancy exceeded in number the deaths from any of the leading causes. While in such a classification the deaths from the specified diseases affecting infants rank first in Georgia, in the death-registration area in 1920 they ranked fourth, being exceeded in number by deaths from organic diseases of the heart, pneumonia, or tuberculosis. The infant mortality rate in Georgia for the same year, based upon registered births and infant deaths, showed that of every 1,000 live-born infants, both white and colored, 90 failed to survive their first year. This rate is higher than that of 86 for the entire birth-registration area in 1920. It must be remembered, however, that the rate may give an overstatement of infant mortality due to less complete registration of births than of deaths.

Another benefit obtained through the enforcement of the registration law is that relating to the practice of midwifery. While midwives are not under State supervision in Georgia, under the registration law State control is exercised to the extent that all midwives must register with the local registrar and must report births within 10 days. In addition, the law for the prevention of blindness enacted by the Georgia Legislature in 1918 requires the midwife as

well as the physician to use silver nitrate solution in the eyes of a newborn child.

### **Division of child hygiene.**

Further recognition of the needs of mothers and children in Georgia came with the organization of a division of child hygiene in the State department of health in 1920.

"We believe that child hygiene is fundamentally the most important branch of public-health work," writes the secretary of the State board of health in his annual report for that year.

"The division has as its object, (1) proper prenatal care of the child, (2) proper post-partum care of the mother and child, (3) registration of the child's birth, (4) proper care of the infant and preschool age child, (5) a physical examination and follow-up work for every school child in Georgia.

"The child-hygiene work will eventually be carried on by the county commissioners of health, who are full-time health officers, but who number only 20 at the present time. The problem is at present, therefore, a double-fold one, (1) presenting the work to the county commissioners of health, (2) the more difficult one of getting the work across in those counties that have no health organization. It is an interesting commentary, by the way, that commissioners of health are, as a whole, conversant with problems of water supply, sewage disposal, epidemic control, venereal diseases, etc., but know very little about child hygiene or the organization of this work; and, what is a sadder reflection, the usual medical school has little in its curriculum to supply the need."

Briefly summarized, the activities of the child-hygiene division in 1921 included physical examinations of 59,213 school children, with correction of defects in some 5,000 cases; the operation of 36 children's health centers in 20 counties and 39 throat, nose, and dental clinics in 27 counties; a series of lectures on child hygiene at 84 community centers throughout the State; and the distribution of nearly 150,000 pieces of literature relating to maternal and child welfare.

The educational literature issued by the child-hygiene division includes publications in three series—the prenatal, the preschool, and the school child. Among the publications in the prenatal series are eight lessons to midwives. Each lesson is written in simple language and printed on a separate sheet, the essential instructions for procedure before, at, and after the baby's birth being given step by step. In the preschool series come the "Georgia Baby Book" on infant care and diet slips "to be tacked above the kitchen table" for ready reference as to the proper feeding of children at various

ages up to the sixth year. Also included in this series are outlines on breast feeding, milk, and the summer care of infants to prevent gastrointestinal diseases, prepared by the Georgia Pediatrics Association for the division of child hygiene. In the series for the school child are pamphlets on physical examinations, weight and nutrition, the school clinic, and score and record cards.

Much has already been accomplished by the young division, and broadened activities are planned as the work develops. These plans call for a greater emphasis on prenatal work, especially needed in the rural districts of Georgia.

### **County health organization.**

County organization for health work is included in the discussion of measures relating to maternity and infancy because of its important bearing upon improvement in rural conditions and because the State health board proposes to have the county unit, when perfected, carry on the rural work for child hygiene. The Ellis health law, an act of 1914 providing for organized county boards of health and for full-time county commissioners of health under the supervision of the State board, becomes effective in each county of Georgia only after the recommendation of two successive grand juries. Its operation then hinges upon provision in the county budget for maintenance. Of Georgia's 160 counties, 33 have had the necessary recommendations by the grand jury, but in 1921 only 18 counties were operating under the law with full-time health commissioners. Twelve counties had adopted the law but were not yet prepared to carry it out, and three others had discontinued its operation. As would be expected, the organized counties are the progressive, accessible, and well-populated ones, each having at least one city of considerable size. Such counties are the ones best equipped to finance the law. The isolated and less prosperous counties, most in need of its provisions, are slower to respond.

Without discussion of the more general activities of the State board of health, its progress from 1918 to 1921 is best indicated by a comparison of activities in the two years. Prior to and including 1918, the work of the board was confined chiefly to the laboratory. In 1921 its organization included the following divisions: Laboratories, sanitary engineering and water analysis, vital statistics, communicable diseases, venereal disease control, child hygiene, and county health work.

### **Public-health nursing.**

Public-health nursing service in Georgia is not fostered by State legislation, and is not organized under the State department of health, although in 1921 seven counties operating under the Ellis

Health Law had public-health nurses attached to the county organization under State supervision. The public-health nursing service in Georgia is essentially urban. Atlanta, Savannah, Augusta, Macon, and Columbus, all cities of more than 25,000 population, have nursing forces. Nine additional counties had one public-health nurse each in 1921; and in six of these, also—Clarke, Dougherty, Floyd, Glynn, Troup, and Ware—the work may be classed as chiefly urban, as there are cities in each between 10,000 and 25,000 in population. Three counties rural in make-up, Cobb, Seminole, and Colquitt, maintained public-health nurses in 1921. In the case of Seminole, a new county established on January 1, 1921, provision was made for a public-health nurse under the act establishing the county.



## SUMMARY.

The findings of the survey of the mountain county in Georgia are in general accordance with those of surveys made by the Children's Bureau in other rural sections of the United States, in that they clearly indicate the need for more adequate provision for the protection of maternity and infancy. In the mountain county the difficulties and needs of mother and child were intensified by the rugged topography and consequent isolation, retardation of development, and lack of good roads.

The families were made up exclusively of native-born white persons of native parentage, many of whom were living under pioneer conditions. A résumé of the findings shows the following outstanding features in regard to maternity and infant care:

Facilities for medical care in the county were meager. There was no hospital within its borders, and the number of physicians, in proportion to population, was much smaller than the average for the United States. Difficulties of travel and lack of telephone service added to the inaccessibility of medical aid. A striking illustration of the situation was seen in the fact that no physician was reported in attendance at the deaths of more than two-thirds of the babies in the group studied who died in their first year. In some measure lack of medical care was caused by failure to recognize its need, as in the cases of the large number of mothers who sought no prenatal supervision.

A high birth rate was indicated by the frequent childbearing of the mothers interviewed. During their last pregnancy, more than four-fifths of these mothers had had no prenatal care and the care received by the remainder was wholly inadequate. Among the 505 mothers were 89 bearing their first babies, and of these only 7 had medical advice prior to confinement. Physicians attended two-thirds of the mothers at childbirth, but in more than 10 per cent of these cases did not arrive until after delivery. More than one-fourth of the mothers were attended by midwives, and 29 gave birth to their babies without the aid of either physician or midwife.

The practice of midwifery was not regulated by the State, and the mountain midwives interviewed were ignorant of the measures of cleanliness and asepsis required in obstetrical care. Their practice was dangerous for the further reason that they fostered super-

stitious and primitive customs. Medical attention during the lying-in period was not customary, and more than three-fourths of the mothers attended by physicians at confinement received no postnatal calls. None of the mothers had trained nursing care, and they depended largely upon members of the household and neighbors for both nursing care and help with the housework after the baby's birth.

The work of the mountain women was arduous, and they had no regular domestic help. Large families, the care of children, and a wide range of duties made heavy housework; and in addition the majority of mothers performed various farm chores. Half of them also reported working in the field either during pregnancy or shortly after the birth of the baby. As the result of onerous duties and lack of help, many mothers were at work before they had fully regained their strength after childbirth. In some instances heavy tasks performed were reported as the causes of miscarriage.

Lack of schools, and housework or field labor in girlhood, were responsible for the high percentage of illiteracy found among mothers. One-fifth could neither read nor write and many others, reported as literate, had learned but the barest rudiments during a few months at school. For this reason, printed advice on infant care could not be profited by and only 17 per cent of the mothers reported printed matter as a source of instruction on infant care. This was a serious handicap where neither the physician's advice nor the valuable and practical demonstrations of the public-health nurse were available.

The absence and need of scientific instruction in infant feeding were marked. While breast feeding was universal, the custom of giving solid food and family diet too soon counteracted the full benefits of nursing, and again the mothers nursed their babies beyond the period considered desirable.

Physical examinations given to a group of town and country children at the child-health conferences held in the county following the survey showed that although the children were average or above in size, more than three-fifths had physical defects. Defects of skin and teeth were the most prevalent. The diseases most commonly reported by mothers as affecting the babies born during the selected period were those of the digestive tract. Among older children communicable diseases had been the most frequent cause of illness.

About half of all the mothers reported losses during their maternal histories, from miscarriages, stillbirths, or infant deaths. The miscarriage rate was the highest found in any of the rural studies of the Children's Bureau, and the stillbirth rate was exceeded by that for only one other rural area studied.



Losses in early infancy among the babies born during the second year of the study point to a high mortality due to natal and prenatal conditions. Although general comparisons of infant mortality in city and country indicate somewhat lower rates for the rural babies when the entire first year is considered, this is not the case if the comparison is limited to the first month of life, when deaths are known to be in a large part due to causes related to pregnancy and confinement. In the mountain county the death rate under one month was considerably higher than that for white babies in New York City in 1919, and almost three times as great as the rate, in 1918, shown for a group of New York babies whose mothers received instruction and care through the prenatal nursing service of the New York City Bureau of Child Hygiene.

Nearly one-half of the babies under 2 years of age had been given patent medicines, and more than one-fifth of the mothers had used such preparations during their last pregnancy. A number of the remedies used had been judged misbranded under the Federal food and drugs act and analyses of their contents indicated they were either worthless or harmful.

The typical mountain home, while picturesque, was unsatisfactory in size and convenience. The crowding of sleeping quarters was the most serious defect of housing. In more than one-fourth of the homes there were five or more persons per bedroom. The lack of convenient equipment for the housewife was evident in nearly every home visited; and in a list of a dozen modern conveniences which are generally considered necessities in the rural home of to-day, only one—the sewing machine—was frequently found. Telephones, screens, sinks, and a convenient water supply were conspicuously wanting. The essential principles of home sanitation were not understood, and 85 per cent of the families were without toilets of any kind. The source of water supply, usually a spring, was not as a rule properly protected from pollution. Records of illness in the families studied indicated a considerable prevalence of typhoid fever, and in some instances contamination of the water supply was reported as coincident with cases of the disease.

Birth and death registration was wholly lacking in the county at the time of the survey, due to nonenforcement of the State law for the registration of vital statistics. This condition has subsequently been corrected by state-wide enforcement of registration. A survey of State health activities up to the close of 1921 shows marked progress in Georgia in the promotion of measures of protection for maternity and infancy. The State has been admitted to the United States death-registration area and registration of births is rapidly being perfected to meet the requirements for admission to

the birth-registration area. A division of child hygiene organized in the State board of health has developed a well-rounded program for the conservation of the health of mother and child. State legislation for the prevention of blindness was enacted in 1918. County organization for health work, provided for by legislation in 1914, has developed slowly. Its adoption in each county depends first upon recommendation by two successive grand juries and then upon financial provision in the county budget. This legislation was not operative in the county surveyed nor had it been adopted at the close of 1921. The county was therefore without the services of a full-time health commissioner and did not benefit from the public-health work dependent upon county organization.

Public-health nursing service in Georgia is not fostered by State legislation or organization under the State department of health. In the larger cities nursing forces were maintained in 1921, but only a few of the essentially rural counties had provisions for a public-health nurse. These did not include the mountain county studied.

## CONCLUSIONS.

While the province of this report is confined to the problems confronting mothers in bearing and rearing their children, the fundamental needs of the people as a whole in the more remote sections of the Southern highlands can not be disassociated from this more specific phase of family life.

"The mountain people are to be regarded as a great social group of families somewhat isolated and retarded in the development and change which have visited their fellow countrymen in other parts of the land. Whatever are the needs of rural communities anywhere are the needs of the mountain region in still greater degree," writes the president of a mountain college in a symposium on the needs of white people in the uplands of the South collected by the Conference of Southern Mountain Workers. Further expressions of opinion to the conference by churchmen, educators, physicians, and social workers present a composite plea for education in its broadest sense, good roads, development of agricultural resources by scientific cultivation of crops suited to soil and climate, and preventive and efficient public-health work.

The highlanders are known to be a steady, self-reliant, honest people with great native ability, who will ultimately conquer the conditions which have deprived them of many of the opportunities of life. While, with their economic and social development, improved living conditions will come, the pressing problems affecting maternity and infancy disclosed for the area surveyed point to urgent need for immediate relief.

A rural public-health nursing service seems to offer the most immediate and tangible solution of the problem. The rapid development and success of public-health nursing in many parts of the country has carried it beyond the experimental stage. Nursing services maintained in many communities by private agencies have been taken over as a public obligation, and a number of States are organizing public-health nursing service in their State departments of health.<sup>30</sup> A further stimulus to the movement is now offered by the financial aid available through the Federal act for the promotion of the welfare and hygiene of maternity and infancy. Financial provision for public-health nursing service in the county sur-

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<sup>30</sup> An Analysis of Present State Recognition of Public Health Nursing. Reprinted from the Public Health Nurse, Oct., 1920.

veyed, as well as in other mountain counties, will be forthcoming when the public is convinced of the need and value of such service. The findings of the survey seem convincing proof of the need of the public-health nurse to teach the mountain mothers the hygiene of pregnancy and the principles of infant and child hygiene. Because of isolation and illiteracy it is especially important that instruction be brought to the mother in her home. In the home visits the nurse will advise the pregnant mother about daily details of care to avoid discomfort and disability, she will see that regular urinalyses are made, watch for symptoms of complications, help to arrange household affairs for the lying-in period, and convince the mother and her husband of the necessity for good obstetrical service.

Instruction by the nurse on child care, with emphasis upon proper methods of infant feeding, is especially needed in the area studied. The earnest efforts of many mothers to do their best for their children are unavailing because they do not understand the needs of the growing child. The nurse may also help the mother with practical suggestions for adjustments that will lighten her work and improve the household management.

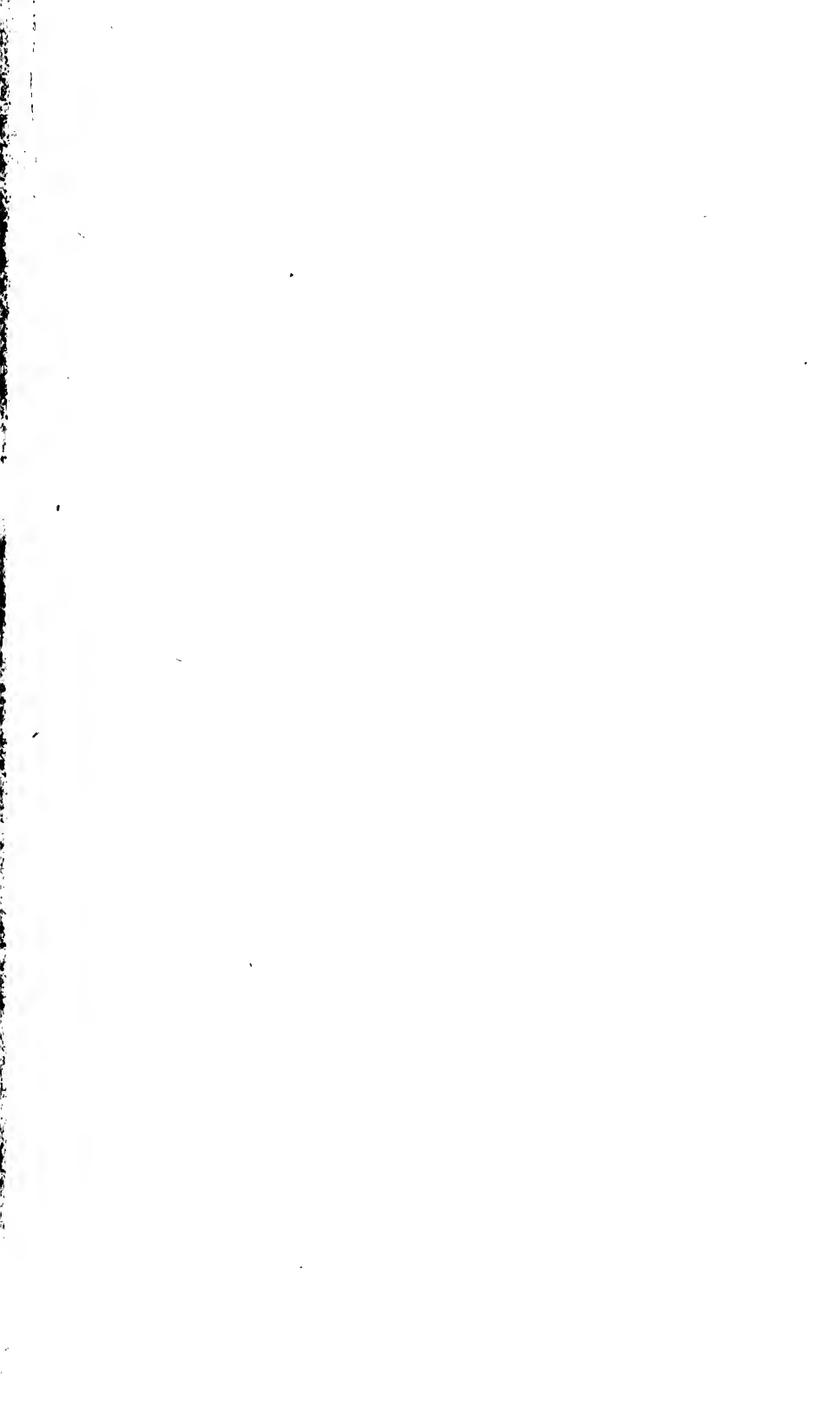
Of the actual saving of life and improvement of health and home conditions through a public-health nursing service, no better illustration can be given than the results effected by the prenatal nursing service of the New York City Bureau of Child Hygiene, the director of which states:

With a more extended and, if possible, a general application of prenatal instruction to mothers of the city, who stand in need of such care, the bureau of child hygiene is convinced that there would result a lower infant mortality rate, especially during the first month of life, fewer deaths from congenital diseases, fewer premature and stillbirths, fewer accidents to mother and child, fewer deaths of mothers, fewer cases of sore eyes, better home conditions, increased maternal nursing, fewer deliveries by midwives, increased birth registration, better care of babies, or, to summarize—better mothers, better babies and better homes.<sup>31</sup>

While rural public-health nursing is regarded as the most feasible initial step toward the betterment of conditions affecting maternity and infancy in the mountain county, other important needs include hospital service which would provide beds for maternity cases; medical care available to every home in the area; a full-time county commissioner of health; and regulation of the practice of midwifery.

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<sup>31</sup> Baker, Josephine S., M. D., and Sobel, Jacob, M. D.: Control of Infant Morbidity and Mortality in New York City. Monthly Bulletin of the Department of Health, City of New York, October, 1921, p. 233.



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